Vol. 929 Number 5

OFFICIAL GAZETTE

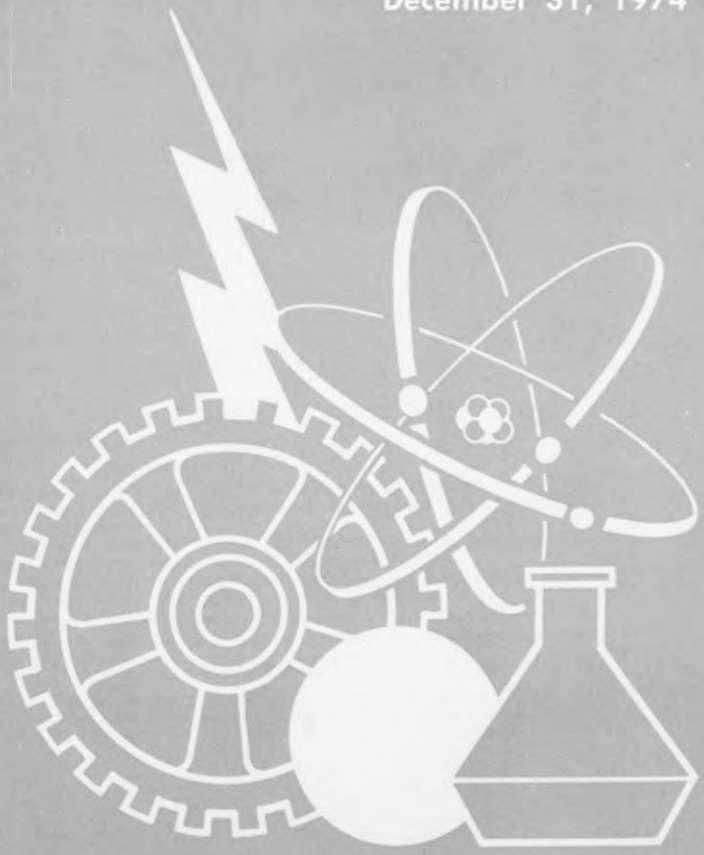
of the

UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

December 31, 1974



U. S. DEPARTMENT OF COMMERCE

Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 31, 1974 Volume 929 Number 5

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PATENT OFFICE NOTICES

Publication of Applications Under Trial Voluntary Protest Program

The January 28, 1975 issue of the Official Gazette will include publication of information identifying the 665 applications in which secrecy was waived under the Trial Voluntary Protest Program announced by the Notice of May 7, 1974, published at 923 O.G. 2 on June 4, 1974. The identifying information will include matter similar to that used in the Official Gazette for patents and will also list the references cited by the Patent Office and the number of the examining group in which the application was examined.

From January 28, 1975 to April 28, 1975 the application files of the applications listed in the Official Gazette will be made available for public inspection upon written request in the examining group identified.

Applications in which secrecy has been waived under the Trial Voluntary Protest Program will be published in printed form, similar to that of printed patents. Printed copies will be available on and after January 28, 1975 at the prices set by statute for patent copies. Orders for copies of the published applications must include the "B" prefix before the Serial Number to differentiate them from orders for patents.

Orders for copies of the January 28, 1975 Official Gazette may be placed with the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The price is $6.60 per copy.

Any protests relating to the patentability of these published applications must be filed in writing in the Patent Office no later than April 28, 1975.

C. MARSHALL DANN,
Commissioner of Patents.

Dec. 2, 1974

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before January 21, 1975.

Edwards, David, 800 Southern Ave., S.E., #522, Washington, D.C. 20032

Gnuse, Robert F., 6621 N. 19th St., Arlington, Va. 22205

Lange, Richard P., 2810 Seattle First Nat'l Bank Bldg., Seattle, Wash. 98040

Ruegg, Arnold, Jr., 6307 Valley Road, Bethesda, Md. 22034

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Board of Appeals Decisions Rendered in the Month of November 1974

Examiner affirmed	202
Examiner affirmed in part	40
Examiner reversed	88
Total	330

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,033,354, P. Della Porta, GETTER DEVICE; **3,151,736,** same, GETTER DEVICES OF THE RING SHAPED KIND; **3,225,911,** same, RING-SHAPED GETTER WITH TOP DEFLECTOR, FOR IMPROVING AND/OR KEEPING UP VACUUM IN ELECTRONIC TUBES; **3,388,955,** Della Porta, Giorgi and Rabusin, PROCESS FOR PRODUCING WITHIN ELECTRON TUBES, IN PARTICULAR TELEVISION PICTURE TUBES, A THIN METALLIC FILM CAPABLE OF SORBING THEIR RESIDUAL GASES; **3,389,288,** same, GETTERING DEVICE INCLUDING A GETTER METAL AND A GAS RELEASING MATERIAL, **filed** June 6, 1974, D.C., N.D. Ohio (Cleveland), Doc. C74–510, *S.A.E.S. Getters S.p.A.* v. *Union Carbide Corporation.*

3,151,736. (See 3,033,354.)

3,180,639, Cotler and Lemelson, INFLATABLE TOY AND DISPLAY DEVICE, **filed** June 9, 1970, D.C., S.D.N.Y., Doc. 70–C–2409, *Jules Cotler* v. *Ideal Toy Corporation.* Filed stipulation and order that action is dismissed, Jan. 30, 1974.

3,200,149, Blackwood, Rennhard, Beereboom and Stephens, α-6-DEOXY-TETRACYCLINE DERIVATIVES AND PROCESS, **filed** July 9, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–1927–LTL, *Pfizer Inc.* v. *Revlon, Inc.*

3,225,911. (See 3,033,354.)

3,236,664, R. E. Wilson, PITCH-BONDED REFRACTORY COMPOSITION; **Re. 27,111,** same, **filed** May 3, 1974, D.C., N.D. Ohio (Toledo), Doc. C–74–168, *Basic Incorporated* v. *Kaiser Aluminum and Chemical Corporation.* **Same, filed** July 22, 1974, D.C., N.D. Ind. (Fort Wayne), Doc. F–74–85, *Basic Incorporated* v. *International Minerals & Chemical Corporation.*

3,249,270, B. Zuckerman, GARMENT SUPPORT MEANS, **filed** Aug. 31, 1971, D.C., S.D.N.Y., Doc. 71–C–3876, *Mr. Hanger, Inc.* v. *W. R. Grace & Co.* Filed stipulation and order of dismissal without prejudice, June 4, 1973.

3,287,063, A. S. Nicholas, RETRACTOR HOUSING, **filed** May 30, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1486, *U.S. Industries, Inc.* v. *Gateway Industries.* Stipulation, order cause dismissed without prejudice, July 19, 1974.

3,332,289, Weichselbaum and Horn, MEANS FOR MEASURING THE SPECIFIC GRAVITY OF LIQUIDS AND SOLUTIONS, **filed** June 7, 1971, D.C., S.D.N.Y., Doc. 71–C–2527, *Add A Bin Co.* v. *Michael Dydzyk.* Filed order of discontinuance without prejudice, Mar. 14, 1974.

3,362,627, H. Papst, VENTILATOR, **filed** Aug. 18, 1970, D.C., S.D.N.Y., Doc. 70–3569, *Papst Motoren KG* v. *Rotron Incorporated.* Filed stipulation of dismissal with prejudice, May 17, 1974.

3,388,574, V. Ignoffo, ATTACHMENT FOR A TUBING BENDER FOR CONTROLLING THE DEPTH OF BEND OF TUBING, **filed** Mar. 20, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c710, *Vincent E. Ignoffo* v. *Midas International Corp. and Huth Manufacturing Corporation.* Dismissal order, ordered that cause as to Midas and Huth is hereby dismissed with prejudice, and counterclaim of Midas and Huth against Ignoffo are hereby dismissed with prejudice, Nov. 30, 1973.

3,388,955. (See 3,033,354.)

3,389,288. (See 3,033,354.)

3,390,689, M. Newman, ARRANGEMENT FOR TREATING HAIR, **filed** Sept. 8, 1969, D.C., S.D.N.Y., Doc.69–C–3900, *Martin Newman and Pig-n-Puff Inc.* v. *Uniroyal Inc. et al.* Filed order of dismissal with prejudice, May 25, 1973.

3,400,461, T. L. Faul, CARRIAGE-TYPE DRAWING APPARATUS, **filed** Aug. 16, 1972, D.C., S.D.N.Y., Doc. 72–C–3494, *Firma Albert Nesetler, AG* v. *Keuffel & Esser Co.* Filed stipulation and order of dismissal without prejudice, Feb. 28, 1974.

3,440,144, H. W. Andersen, METHOD AND APPARATUS FOR CHECKING AND TESTING THE EFFECTIVENESS OF STERILIZATION, **filed** July 6, 1970, D.C., S.D.N.Y., Doc. 70–C–2891, *H. W. Andersen Products, Inc.* v. *3M Company.* Filed stipulation and order of dismissal, Apr. 28, 1972.

3,443,684, R. E. Taylor, CORNER PROTECTORS, **filed** July 11, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1943, *Redi Container Corporation* v. *The Packaging House, Inc. et al.*

3,459,248, R. E. Waller, WIRE INSERT, **filed** Dec. 18, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2961–HP, *Microdot, Inc.* v. *Inserts International Inc.*

3,460,125, Liebermann and Lai, METHOD AND APPARATUS FOR DETECTING GASEOUS IMPURITIES, **filed** June 7, 1974, D.C., E.D. Mich. (Detroit), Doc. 74–1830, *Tif Instruments, Inc.* v. *Michael Colette, doing business as Coletric Co. and Colette Electric Co.*

3,400,495, W. L. Cobb, METHOD FOR EMBROIDERING TUFTS, **filed** Feb. 2, 1970, D.C., S.D.N.Y., Doc. 70–406, *Cobb Industries Inc.* v. *Park Schiffli Inc. et ano.* Filed judgment dismissing complaint, Dec. 21, 1972.

3,487,999, Nash, La Branche, Newman and Smith, ROADWAY TOY, **filed** Jan. 9, 1970, D.C., S.D.N.Y., Doc. 70–62, *Mattel Inc.* v. *Topper Corporation.* Filed plaintiff's stipulation and order dismissing without prejudice, Apr. 9, 1974.

3,502,293, M. Bard, SHELF-SUPPORTING STANDARD WITH REMOVABLE HEAD, **filed** July 24, 1970, D.C., S.D.N.Y., Doc. 70–C–3200, *Martin Bard* v. *Quality Steel Products, Inc.* Filed voluntary dismissal, Apr. 30, 1973.

3,502,785, A. D. Nickola, MOUNTING PEDESTAL FOR UTILITIES; **Re. 27,400,** same, **filed** June 14, 1974, D.C., E.D. Mich. (Detroit), Doc. 74–71890, *Ann D. Nickola* v. *Eaton Installation Company, Inc.*

3,570,018, Sargent, Sargent and Sargent, PORTABLE TOILET, **filed** May 30, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1205–AAH, *Monogram Industries, Inc.* v. *Thetford Corporation.* Filed stipulation of dismissal of the complaint and counterclaim with prejudice, July 11, 1974.

3,576,099, R. S. Walton, SOLID STATE TIME PIECE HAVING ELECTRO OPTICAL TIME DISPLAY; **3,664,118,** same, ELECTRONICALLY CONTROLLED TIMEPIECE USING LOW POWER MOS TRANSISTOR CIRCUITRY; **3,672,155,** Bergey and Walton, SOLID STATE WATCH, **filed** Oct. 6, 1972, D.C., S.D.N.Y., Doc. 72–C–4261, *HMW Industries Inc.* v. *Uranus Electronics, Inc. and Elgin National Industries, Inc.* Filed order and stipulation of discontinuance without prejudice, Oct. 29, 1973.

3,611,910, J. S. Hughes, CORN POPPER, **filed** Jan. 29, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c260, *Ropat Corporation* v. *National Presto Industries Inc.* The defendant's motion to dismiss because of improper venue is granted, Apr. 25, 1974.

3,614,741, McFarland, Jr. and O'Loughlin, DATA PROCESSING SYSTEM WITH INSTRUCTION ADDRESSES IDENTIFYING ONE OF A PLURALITY OF REGISTERS INCLUDING THE PROGRAM COUNTER; **3,710,324,** Cohen, Janson, McFarland, Jr. and Young, DATA PROCESSING SYSTEM; **Reg. No. 807,243** (POP), Digital Equipment Corporation, **filed** May 29, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–1486–HP, *Digital Equipment Corporation* v. *California Data Processors.*

3,644,681, D. E. Rice, CORDLESS TELEPHONE SYSTEM, **filed** July 22, 1974, D.C., S.D. Calif. (San Diego), Doc. 74–356–E, *Bison Enterprises, Ltd.* v. *Howard Gutzmer, doing business as Gutzmer International & Fonctron, Inc.*

3,664,118. (See 3,576,099.)

3,672,155. (See 3,576,099.)

3,692,349, D. J. Ehrlich, TRAILER CONSTRUCTION, **filed** July 22, 1974, D.C., W.D. Wis. (Madison), Doc. 74–C–261, *Evans Products Company* v. *Stoughton Truck Body, Inc.*

3,694,993, J. L. East, AUTOMATIC BOTTLE PACKING METHOD AND APPARATUS, **filed** Mar. 8, 1974, D.C., W.D. Va. (Lynchburg), Doc. 74–17, *Simplimatic Engineering Company* v. *Alliance Industrial Corporation.* Consent judgment entered in which plaintiff declared owner of patent and defendant permanently enjoined from use or infringement, July 23, 1974.

3,710,324. (See 3,614,741.)

3,724,720, K. W. Bullivvant, DIGITAL MASS FLOW CONTROL SYSTEM, **filed** July 3, 1974, D.C.N.J. (Camden), Doc. 74–1019, *Merrick Scale Mfg. Company* v. *K-Tron Corporation.* **Same, filed** July 16, 1974, D.C.N.J. (Newark), Doc. 74–1063, *K-Tron Corporation* v. *Merrick Scale Mfg. Company.* Notice of dismissal of action filed July 20, 1974.

3,751,649, T. W. Hart, Jr., MEMORY SYSTEM EXERCISER, **filed** July 16, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–2016–DWW, *Macrodata Corporation* v. *Xincom Corp. and Tektronix, Inc.*

3,765,527, J. W. Vargo, DUAL-COMPARTMENT PACKAGE, **filed** July 22, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2062, *Filter Dynamics International, Inc. et al.* v. *Astron Battery Incorporated et al.*

Re. 27,111. (See 3,236,664.)

Re. 27,400. (See 3,502,785.)

D. 205,660, S. Goldman, CERAMIC TILE UNIT, **filed** Dec. 18, 1968, D.C., S.D.N.Y., Doc. 68–C–5048, *International Tile Corp.* v. *Kowa American Corp.* Filed stipulation and order of settlement with prejudice, Nov. 6, 1972.

D. 219,118, Baker and Plecia, BOAT, **filed** Nov. 14, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2669–LTL, *Sidewinder Marine, Inc.* v. *Glen-Coe Boat Mfg., Inc.* Filed Stipulation for dismissal; filed judgment and order thereon in favor of plaintiff and against defendants. Filed permanent injunction and order thereon against defendants from infringing plaintiff's patent, entered July 17, 1974.

D. 227,632, E. S. Gilbert, UPHOLSTERED SEAT, **filed** July 23, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1867, *Evalin S. Gilbert* v. *Fitchmun Company.* Final judgment, by agreement cause dismissed, July 19, 1974.

D. 230,353, P. J. Mochel, AUTOMOBILE WHEEL, **filed** July 23, 1974, D.C., C.D. Calif. (Los Angeles), Doc. C 74–2089–RF, *W. R. Grace & Co.* v. *E.T. Industries, Inc. and Pyramid Enterprises.*

Reg. No. 807,243. (See 3,614,741.)

Certificates of Correction for the Week of Dec. 31, 1974

Re. 28,162	3,802,892	3,830,932	3,839,300
D. 232,529	3,803,105	3,831,011	3,839,363
D. 232,872	3,803,147	3,831,348	3,839,567
D. 233,264	3,804,562	3,831,770	3,839,924
D. 233,265	3,805,265	3,832,281	3,839,949
3,211,709	3,807,653	3,832,299	3,840,145
3,597,530	3,807,791	3,832,301	3,840,182
3,622,256	3,808,345	3,832,421	3,840,297
3,666,782	3,808,554	3,832,677	3,840,511
3,684,477	3,809,826	3,833,451	3,840,521
3,690,988	3,810,415	3,833,642	3,840,921
3,691,370	3,811,420	3,833,783	3,841,004
3,697,543	3,812,810	3,834,091	3,841,113
3,699,145	3,812,882	3,834,115	3,841,141
3,704,322	3,813,409	3,834,605	3,841,144
3,717,451	3,813,416	3,834,805	3,841,215
3,728,116	3,814,561	3,834,918	3,841,295
3,728,355	3,815,007	3,834,991	3,841,321
3,745,575	3,816,806	3,835,001	3,841,399
3,747,778	3,817,338	3,835,186	3,841,440
3,748,756	3,817,420	3,835,298	3,841,521
3,749,694	3,818,055	3,835,419	3,841,555
3,751,426	3,818,783	3,835,495	3,841,833
3,755,270	3,818,980	3,835,714	3,841,972
3,755,745	3,819,516	3,835,850	3,842,033
3,758,236	3,820,069	3,835,905	3,842,344
3,758,434	3,820,113	3,836,015	3,842,395
3,759,902	3,820,665	3,836,632	3,842,406
3,760,164	3,820,757	3,836,646	3,842,446
3,760,375	3,822,647	3,836,720	3,842,638
3,763,354	3,823,116	3,836,766	3,842,767
3,764,450	3,823,206	3,836,903	3,842,941
3,765,268	3,823,767	3,836,997	3,842,971
3,770,418	3,826,707	3,837,016	3,842,973
3,771,236	3,826,724	3,837,106	3,842,975
3,773,071	3,826,768	3,837,214	3,843,249
3,773,688	3,826,836	3,837,526	3,843,340
3,773,697	3,827,931	3,837,586	3,843,409
3,773,721	3,827,948	3,837,911	3,843,514
3,774,120	3,828,258	3,837,935	3,843,546
3,775,349	3,828,873	3,838,114	3,843,588
3,776,253	3,829,194	3,838,147	3,843,641
3,779,781	3,829,228	3,838,183	3,843,720
3,787,211	3,829,293	3,838,224	3,843,735
3,787,463	3,829,343	3,838,525	3,843,758
3,789,092	3,829,353	3,838,650	3,844,202
3,790,451	3,829,489	3,838,704	3,844,337
3,792,060	3,829,785	3,838,719	3,844,662
3,792,625	3,829,867	3,838,887	3,845,385
3,793,295	3,829,943	3,838,889	3,845,399
3,793,370	3,830,068	3,838,999	3,845,502
3,796,694	3,830,090	3,839,040	3,845,872
3,800,181	3,830,254	3,839,042	3,846,006
3,800,296	3,830,506	3,839,084	3,846,100
3,801,972	3,830,791	3,839,215	
3,802,507	3,830,792	3,839,222	

Patents Available for Licensing or Sale

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELEVISED IMAGE. Samuel Freeman, 13 Birchwood Court, East Syosset, N.Y., 11791.

3,302,810. SELF LOADING FORK LIFT TRUCK. R. R. Pollock, Rte. 4, Box 1218–D–2, Woodland, Calif. 95695.

3,408,921. BEVERAGE MAKING ARRANGEMENT. B. M. L., Staff Vice President, Domestic Licensing, P.O. Box 6512, San Jose, Calif., 95150.

3,505,678. MULTIPURPOSE HAIR NET. Gladys B. Key, 404 4th Isle South, Port Rickey, Fla., 33568.

3,760,963. LIFTING ATTACHMENT FOR A CRANE. Forrest D. Welch, Correspondence to: Ronald P. Kananen, 1828 L St., N.W., Washington, D.C., 20036.

3,711,215. DRILLING BOLT HOLES. John V. Brown, Correspondence to: Caesar, Rivise, et al. Suite 804, Stephen Girard Bldg., 21 S. 12th St., Philadelphia, Pa., 19107.

3,774,193. WATCHMAN'S TOUR ALARM SYSTEM. Tulio Vasquez Restrepo, Carrera 43A No. 30–91, Medellin, Colombia.

3,778,931. THRESHOLD ANCHOR DEVICE. T. C. Donaldson, P.O. Box 1567, Odessa, Tex., 79760.

3,791,601. TISSUE ROLL DISPENSER. Kenneth J. Broden, 15 Barberry Drive, Rumford, R.I., 02916.

3,811,990. THERMALLY ACTUATED MOBILE. Nagel K. G., Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,813,958. LOCKING DEVICE FOR A WINDING ARRANGEMENT. GFA-Antriebstechnik, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,832,501. JAY-JAY BREAKAWAY TRAILER SAFETY SWITCH BRACKET KIT. John J. Amnotte, Town & Country Mobile Pk., Sp. 12, Box 2708, Harbor, Oreg., 97415.

3,840,113. TOTEM NAME BATIK KIT. Francis E. Bartleson, 109 Woodland Drive, Big Flats, N.Y., 14814.

3,838,854. GYMINY-G-EXERIDE. William H. Hendrickson. Rte. 2, Box 17-A, Mancos, Colo., 81328.

3,843,133. GAME APPARATUS FOR PLAYING AND RECORDING SUCCESSIVE PLAYS IN A GAME. Paul D. Brown. Correspondence to: Gustave Miller, 1700 N.E. 191st St., 409, Miami, Fla., 33162.

3,844,873. CHRISTMAS TREE CONSTRUCTION. Sylvester A. Dalske, 110 Caselli Circle #1, Sacramento, Calif., 95823.

The following 2 patents are offered by: Susan M. Peoples, 5201 Belleville Ave., Baltimore, Md., 21207.

D. 213,627. PORTABLE TWO-WAY COIN OPERATED TELEPHONE FOR INSTITUTIONS AND HOSPITALS.

D. 217,156. PORTABLE TWO-WAY COIN OPERATED TELEPHONE.

The following 2 patents are offered by: John O. Richards, 980 Mill Circle, Apt. 99, Alliance, Ohio, 44601.

3,578,840. REVOLVING REFLECTOR.

3,835,507. ROPE HOLDING DEVICE.

The following 2 patents are offered by: Clarke's Sheet Metal, Inc. Correspondence to: Daniel P. Chernoff, Chernoff & Vilhauer, 400 Oregon National Bldg., 610 S.W. Alder, Portland, Oreg., 97205.

3,749,030. HEATING AND EXHAUST EMISSION CONTROL SYSTEM AND METHOD FOR MATERIAL DRYERS.

3,749,031. CONTROLLED ATMOSPHERE INCINERATOR.

The following 3 patents are offered by: Billy R. Garrett. Correspondence to: J. Bruce Synnott, Jr., University Park Apartments, Revere House, Apt. A, 300 S. Rankin, Edmond, Okla., 73034.

3,843,082. HOLDER FOR GASOLINE LANTERN.

3,844,519. HOLDER FOR GASOLINE LANTERN.

3,847,286. HOLDER FOR GASOLINE LANTERN.

General Motors Corporation is prepared to grant non-exclusive licenses under the following 4 patents upon reasonable terms.

Applications for licenses may be addressed to the Director, Plant Section, General Motors Bldg., 3044 W. Grand Blvd., Detroit, Mich., 48202.

3,642,343. LINEAR OPTICAL SCANNING DEVICES.

3,644,059. COOLED AIRFOIL.

3,644,060. COOLED AIRFOIL.

3,645,592. LUBRICANT CIRCULATING ANGULAR CONTACT BALL BEARING.

General Electric Company is prepared to grant non-exclusive licenses under the following 42 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patents may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,822,401. MEAN SQUARE TRANSDUCER.

3,842,187. ELECTRIC BUS WITH JOINT FOR ACCOMMODATING EARTHQUAKE - PRODUCED MOTION OF PARTS.

Applications for licenses under the following 4 patents may be addressed to: General Electric Company, Construction Materials Division, 4755 Kingsway Drive, Suite 416, Indianapolis, Ind., 46205. Attention: Division Patent Counsel.

2,986,623. TIP SHIELDED ELECTRODES FOR ELECTRIC BOILERS.

3,138,696. ELECTRODE HOT WATER GENERATORS.

3,595,476. HTS HEATING SYSTEMS.

3,824,372. LOW VOLTAGE ELECTRIC BOILERS.

Applications for licenses under the following 5 patents may be addressed to: General Electric Company, Division Patent Counsel, Housewares Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,762,154. SIMULATED PENDULUM CLOCK.

3,762,155. SIMULATED PENDULUM CLOCK.

3,731,396. HAIR DRYER WITH SELECTIVE TILTABLE HOOD.

3,735,091. ELECTRICALLY HEATED HAIR CURLING APPARATUS.

3,769,718. HAIR DRYER WITH RELEASE MECHANISM.

Applications for licenses under the following 5 patents may be addressed to: General Electric Co., Transportation Systems Business Division, 2901 E. Lake Road, Erie, Pa., 16531.

3,775,663. INVERTER WITH ELECTRONICALLY CONTROLLED NEUTRAL TERMINAL.

3,806,746. DEVICE FOR PROTECTING BRUSHHOLDERS STUDS.

3,823,278. AERODYNAMICALLY ADJUSTABLE PANTOGRAPH.

3,824,419. TRACTION MOTOR INSPECTION COVER.

3,830,990. PANTOGRAPH WEARING STRIP SUPPORT.

Applications for licenses under the following 7 patents may be addressed to: Patent Counsel, STG PRODS. Division, General Electric Company, 1 River Road, Bldg. No. 43, Schenectady, N.Y., 12345.

3,808,489. COOLED FLUX SHIELD FOR GENERATOR TERMINAL BOX.

3,812,392. COMPOSITE ARMATURE CORE FOR DYNAMOELECTRIC MACHINE.

3,821,573. MULTISET POLYPHASE WINDING.

3,822,389. LIQUID COOLANT PRESSURIZING DEVICE FOR DYNAMOELECTRIC MACHINES.

3,830,620. GAS BURNER FOR HEAT-RECOVERY STEAM GENERATOR.

3,831,160. VOLTAGE AND CURRENT MONITORING SYSTEM.

3,833,826. GAS-COOLED DYNAMOELECTRIC MACHINE.

Applications for licenses under the following 20 patents may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

2,959,966. JOINING MEMBER FOR PROVIDING A FLEXIBLE CONNECTION BETWEEN TWO MOVABLE MEMBERS.

3,003,345. CONTROL CIRCUIT IN AN AUTOMATIC CLOTHES WASHING MACHINE.

3,024,637. AUTOMATIC WASHING MACHINE WITH LID SWITCH CONTROL.

3,440,373. COMBINED HINGE AND SWITCH MECHANISM WITH PIN AND SLOT CONNECTION.

3,479,845. ADDITIVE DISPENSING MEANS FOR A WASHING MACHINE.

3,504,777. COMBINED UNBALANCE AND LID SWITCH.

3,815,942. THERMALLY RESPONSIVE LOCKING MEANS FOR OVEN DOOR LATCHING MECHANISM.

3,817,590. MEANS FOR SUPPORTING ROLLER ASSEMBLIES IN A DISHWASHER TUB.

3,821,594. TWO-STEP MAGNETRON START CIRCUIT.

3,821,681. DUAL RANGE HYDRAULIC THERMOSTATIC CONTROL DEVICE.

3,821,683. THERMAL SWITCH.

3,823,295. ELECTRONIC OVEN WITH MODE EXCITER AND TUNING PROBES.

3,828,251. PORTABLE MICROWAVE RADIATION SENSING AND MEASURING DEVICE.

3,828,763. OVEN DOOR CONSTRUCTION WITH FRONT GLASS PANEL.

3,829,191. MEANS FOR SEALING A COMPONENT SUPPORTING ASSEMBLY IN A WASHING APPLIANCE TUB.

3,832,863. ICE TUNNEL MOUNTING.

RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 74 patents.

Inquiries respecting licenses under RCA patents should be addressed to: RCA Corporation Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y., 10036.

3,828,121. COLOR SIGNAL PRODUCING SYSTEM UTILIZING SPATIAL COLOR ENCODING AND COMB FILTERING.

3,828,206. HIGH SPEED DRIVING CIRCUIT FOR PRODUCING TWO IN-PHASE AND TWO OUT-OF-PHASE SIGNALS.

3,828,234. MOTOR SPEED CONTROL SYSTEM.

3,828,258. SIGNAL DURATION SENSING CIRCUIT.

3,828,996. RECORD WEB CONTROL AND DRIVE APPARATUS.

3,829,612. VIDEO DISC PLAYBACK EDDY CURRENT SPEED CONTROL SYSTEM.

3,829,716. WIDE RANGE MONOSTABLE MULTIVIBRATOR CIRCUIT HAVING A CONSTANT CURRENT SOURCE.

3,829,853. HIGH-SPEED ANALOG-TO-DIGITAL CONVERTER.

3,830,447. ACTIVE NUTATION DAMPING IN DUAL-SPIN SPACECRAFT.

3,830,959. AUTOMATIC CENTERING CONTROL SYSTEM FOR TELEVISION APPARATUS.

3,831,037. PARAMETRIC AMPLIFIER HAVING AN IDLER CIRCUIT REDUCING SPURIOUS IDLER SIGNAL MAGNITUDE.

3,831,054. STORAGE TUBE ERASE CONTROL.

3,831,056. BEAM CURRENT STABILIZATION AND BLANKING APPARATUS.

3,831,074. ROTATOR SYSTEM INCLUDING A REMOTE DRIVE MOTOR AND A LOCAL INDICATOR-CONTROL MOTOR.

3,831,113. RELAXATION OSCILLATOR.

3,831,114. ENCAPSULATED MICROSTRIP CIRCULATOR WITH MODE ELIMINATION MEANS.

3,831,187. THYRISTOR HAVING CAPACITIVELY COUPLED CONTROL ELECTRODE.

3,832,495. INFORMATION TRANSFER SYSTEM FOR A PBX.

3,832,595. HORIZONTAL DEFLECTION SYSTEM WITH BOOSTED B PLUS.

3,832,651. DYNAMIC DIVIDING CIRCUIT FOR DIVIDING AN INPUT FREQUENCY BY TWO.

3,832,652. DYNAMIC DIVIDING CIRCUIT FOR DIVIDING AN INPUT FREQUENCY BY AT LEAST THREE.

3,833,375. METHOD OF REPAIRING AN IMPERFECT PATTERN OF METALIZED PORTIONS ON A SUBSTRATE.

3,833,383. HOLOGRAPHIC RECORDING MEDIUM.

3,833,408. VIDEO DISCS HAVING A METHYL ALKYL SILICONE COATING.

3,833,893. HOLOGRAPHIC MEMORY INCLUDING CORNER REFLECTORS.

3,834,653. CLOSED LOOP ROLL AND YAW CONTROL FOR SATELLITES.

3,834,905. METHOD OF MAKING ELLIPTICALLY OR RECTANGULARLY GRADED PHOTOPRINTING MASTERS.

3,835,248. KEYED AGC CIRCUIT.

3,835,253. TELEVISION COMMUNICATION SYSTEM WITH TIME DELAY COMPENSATION.

3,835,336. PULSE WIDTH SENSING CIRCUIT.

3,835,410. CURRENT AMPLIFIER.

3,835,421. MICROWAVE TRANSMISSION LINE AND DEVICES USING MULTIPLE COPLANAR CONDUCTORS.

3,836,825. HEAT DISSIPATION FOR POWER INTEGRATED CIRCUIT DEVICES.

3,836,845. APPARATUS FOR TESTING THE LINEARITY OF A CIRCUIT BY USING RATIO DETERMINING MEANS.

3,836,960. GEO-SYNCHRONOUS SATELLITES IN QUASI-EQUATORIAL ORBITS.

3,836,995. SEMICONDUCTOR DARLINGTON CIRCUIT.

3,836,996. SEMICONDUCTOR DARLINGTON CIRCUIT.

3,836,997. SEMICONDUCTOR DARLINGTON CIRCUIT.

3,837,071. METHOD OF SIMULTANEOUSLY MAKING A SIGFET AND A MOSFET.

3,837,656. CHIP REMOVAL IN THE MASTERING OF FINE-GROOVED DISCS.

3,838,240. BONDING TOOL AND METHOD OF BONDING THEREWITH.

3,838,304. METHOD OF MAKING A BIALKALI PHOTOCATHODE WITH IMPROVED SENSITIVITY AND HIGH TEMPERATURE OPERATING CHARACTERISTICS.

3,838,311. STORAGE TUBE FOCUS CONTROL.

3,838,834. SOLAR TORQUE COMPENSATION FOR A SATELLITE.

3,838,908. GUIDED LIGHT STRUCTURES EMPLOYING LIQUID CRYSTAL.

3,839,111. METHOD OF ETCHING SILICON OXIDE TO PRODUCE A TAPERED EDGE THEREON.

3,839,644. LABEL WRITING APPARATUS.

3,839,906. APPARATUS FOR ENGINE COMPRESSION TESTING.

3,839,907. ENGINE PERFORMANCE ANALYZER USING SIMULATED LOAD.

3,840,174. PRECISION DIGITAL INTERPOLATOR.

3,840,819. SIGNAL COMBINING CIRCUIT.

3,840,826. VARIABLE DELAY DEVICES USING FERROELASTIC-FERROELECTRIC MATERIALS.

3,840,889. LASER DIODE PACKAGE FORMED OF CERAMIC AND METAL MATERIALS HAVING HIGH ELECTRICAL AND THERMAL CONDUCTIVITY.

3,840,893. TRACK FOLLOWING SERVO SYSTEM.

3,841,881. METHOD FOR ELECTROLESS DEPOSITION OF METAL USING IMPROVED COLLOIDAL CATALYZING SOLUTION.

3,841,904. METHOD OF MAKING A METAL SILICIDE-SILICON SCHOTTKY BARRIER.

3,842,189. CONTACT ARRAY AND METHOD OF MAKING THE SAME.

3,842,194. INFORMATION RECORDS AND RECORDING/PLAYBACK SYSTEMS THEREFOR.

3,842,199. TELEPHONE IMAGE TRANSMISSION SYSTEM.

3,842,217. RECORD FABRICATION OF A CAPACITIVE TYPE STORAGE MEDIUM.

3,842,276. THERMAL RADIATION DETECTOR.

3,843,399. METALLIZED VIDEO DISC HAVING AN INSULATING LAYER THEREON.

3,843,420. SPUTTERED GRANULAR FERROMAGNETIC IRON-NICKEL-SILICA FILMS.

3,843,425. OVERLAY TRANSISTOR EMPLOYING HIGHLY CONDUCTIVE SEMICONDUCTOR GRID AND METHOD FOR MAKING.

3,843,836. COLOR MOTION PICTURE FILM PLAYBACK SYSTEM.

3,843,837. APPARATUS FOR GENERATING SAMPLE PULSES IN A TELEPHONE IMAGE TRANSMISSION SYSTEM.

3,843,843. TIME DIVISION MULTIPLE ACCESS SYNCHRONIZATION TECHNIQUE.

3,843,846. DEMOUNTABLE CAPACITIVE PROTECTIVE COUPLING FOR PICKUP TRANSDUCERS.

3,843,933. CURRENT AMPLIFIER.

3,845,295. CHARGE-COUPLED RADIATION SENSING CIRCUIT WITH CHARGE SKIM-OFF AND RESET.

3,845,328. TRI-STATE LOGIC CIRCUIT.

3,845,403. AMPLIFIER FOR AMPLITUDE MODULATED WAVES WITH MEANS FOR IMPROVING SIDEBAND RESPONSE.

3,845,405. COMPOSITE TRANSISTOR DEVICE WITH OVER CURRENT PROTECTION.

3,845,496. INFRARED PHOTOCATHODE.

Patents Withdrawn From Register

General Electric Company, Division Patent Counsel, Lamp Business Division, Nela Park, Cleveland, Ohio. 44112, hereby withdraws the following patent from the Register of Patents Available for Licensing or Sale. The patent was listed as being available in the OFFICIAL GAZETTE as indicated below:

3,527,982. DISCHARGE LAMP BALLASTING. Oct. 5, 1971.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 7, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-29-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-19-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-14-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-19-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-10-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-10-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-14-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	4-15-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-13-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-19-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	3-4-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-14-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-15-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	5-17-74

Expiration of patents: The patents within the range of numbers indicated below expire during November 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,811,722 to 2,814,801, inclusive
Plant Patents..... Numbers 1,656 to 1,660, inclusive

REISSUE PATENTS

GRANTED DECEMBER 31, 1974

ERRATA

For CLASS	See PATENT NO.
224–028	28,289
235–061	28,285
238–349	28,291
242–084	28,286
308–138	28,284
260–561	28,288
424–244	28,287
360–016	28,290

REISSUES

DECEMBER 31, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,284

SELF-LUBRICATING SIDE BEARING

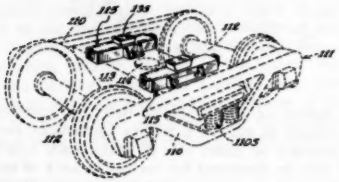
Robert W. MacDonnell, Crete, Ill., assignor to Unity Railway Supply Co., Inc., Chicago, Ill.

Original No. 3,514,169, dated May 26, 1970, Ser. No. 760,019, Sept. 16, 1968, which is a continuation-in-part of application Ser. No. 676,259, Oct. 18, 1967, now Patent No. 3,401,991. Application for reissue May 24, 1972, Ser. No. 256,354

The term of this patent subsequent to Sept. 17, 1985, has been disclaimed

Int. Cl. F16c *17/00, 19/00*

U.S. Cl. 308—138 **12 Claims**



1. A side bearing assembly comprising a box-like support having a bottom wall, a pair of upstanding end walls, means to secure said support to a railway truck bolster, a pair of wedge blocks slidably mounted on said bottom wall, said wedge blocks having oppositely inclined downwardly converging surfaces, an upper plunger wedge mounted on said wedge blocks and having oppositely inclined downwardly converging underface portions slidably engaged on and mating with said inclined block surfaces, and compression spring means resiliently biasing said wedge blocks oppositely inwardly to establish a normal position for said wedge blocks and said plunger wedge wherein a central clearance space extends full length there between and wherein the force of said spring means reacts oppositely outwardly on said end walls, said plunger wedge having a recessed top wall provided with partly projecting roller means to supportingly engage the bottom surface portion of a railway car body located above the bolster and transmit vertical forces between the car and the side bearing assembly for stabilizing the car supported on said bolster and for accommodating swivel movement of said car.

28,285

ARTICLE LABELING AND IDENTIFICATION SYSTEM

Joseph F. Schanne, Cheltenham, Pa., assignor to RCA Corporation

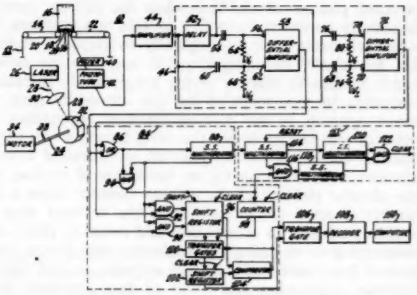
Original No. 3,622,758, dated Nov. 23, 1971, Ser. No. 88,075, Nov. 9, 1970, which is a continuation of abandoned application Ser. No. 740,624, June 27, 1968. Application for reissue Nov. 20, 1973, Ser. No. 417,562

Int. Cl. G06k *5/00*

U.S. Cl. 235—61.11 E **14 Claims**

1. A system for classifying articles comprising, in combination:

means providing a plurality of coded designators with each one of said designators affixed to a corresponding article, said coded designators each exhibiting a plurality of information cells of first and second light-reflecting properties with the occurrence of transitions between said properties of a designator defining a binary number;



means for deriving from each of said coded designators a readback signal which includes first and second levels corresponding to said first and second properties, respectively; and

means for detecting transitions between said first and second levels to provide the binary number defined by said transitions.

28,286

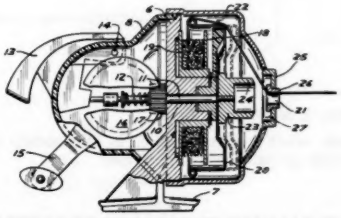
LINE CONTROL FOR SPIN CASTING REELS

Lloyd E. Johnson, deceased, late of Mankato, Minn., by Johnson Diversified, Inc., Mankato, Minn., assignee

Original No. 3,498,562, dated Mar. 3, 1970, Ser. No. 682,208, Nov. 13, 1967. Application for reissue July 27, 1972, Ser. No. 275,847

Int. Cl. A01k *89/00*

U.S. Cl. 242—84.2 A **4 Claims**



1. For a fishing reel in which a body member has a forwardly disposed cover with a line opening, a line spool mounted in the body member on a fore-and-aft axis, a shaft extending through the spool and mounted in the frame for rotary and axial movement, a circular line pick-up member carried on the forward end of the shaft, manually controlled means for moving the shaft and pick-up member between fore-and-aft axial positions with the line passing from the spool over the periphery

of the pick-up member and thence to and out through said opening, means for rotating the shaft when the pick-up member is in one of said two positions to engage the line and wind it on the spool as it is being retrieved rearwardly through said opening, the line being free of winding engagement with the pick-up member when the latter is moved axially away from such position, and means for snubbing the line to stop its forward movement when the pick-up member reaches the other of said positions, means for controlling the forward movement of the line from the reel during the time that the pick-up member is being moved from the first to the second of the aforesaid two positions, comprising a pair of cooperating circular elements carried, one by the cover and one by the pick-up member, and which are axially spaced to allow unobstructed passage of the line when the pick-up member is initially moved from its first of said two positions, but which elements have telescopically overlapping surfaces for frictionally engaging the line and forming reverse bends therein to thereby create progressively increasing resistance to movement of the line outwardly from the cover opening as the pick-up member approaches the other of said two positions, the cover having a rearwardly opening recess formed in part by its aforesaid circular element, *said recess having an inside lateral surface*, and the circular element of the pick-up member being a forwardly directed cylindrical flange the forward edge of which is adapted to project into said recess to effect such telescoping overlapping of surfaces, *said flange being spaced from said inside lateral surface, as said pick-up member approaches said other of two positions, by a distance greater than the thickness of the line to be used.*

28,287

PROCESS FOR THE RESOLUTION OF RACEMIC 3-SUCCINYLOXY - 5 - PHENYL - 1,3-DIHYDRO-2H-1,4-BENZODIAZEPINE - 2-ONE-DERIVATIVES INTO OPTICAL ANTIPODES

Giancarlo Jommi, Giovanna Riva, Francesco Mauri, and Luigi Mauri, Milan, Italy, assignors to Ravizza S.A., Lausanne, Switzerland

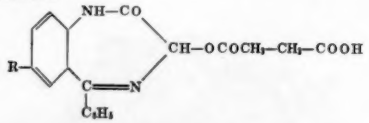
No Drawing. Original No. 3,654,267, dated Apr. 4, 1972, Ser. No. 22,673, Mar. 25, 1970. Application for reissue Sept. 11, 1972, Ser. No. 287,734

Claims priority, application Great Britain, Apr. 8, 1969, 18,034/69; Feb. 28, 1970, 9,759/70

Int. Cl. C07d *53/06*

U.S. Cl. 424—244 **11 Claims**

1. Process for the resolution into optical antipodes of racemic 3 - succinyloxy - 5 - phenyl - 1,3 - dihydro - 2H-1,4-benzodiazepine-2-one derivatives i.e., the compound of the formula



(I)

wherein R is NO_2, Cl, Br, F,

through selective solubilization in ethylacetate of their salts with optically active ephedrine.

28,288

CATALYZED HYDROLYSIS OF NITRILES TO AMIDES

Richard W. Goetz and Irving L. Mador, Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

No Drawing. Original No. 3,670,021, dated June 13, 1972, Ser. No. 690,431, Dec. 14, 1967. Application for reissue Apr. 12, 1973, Ser. No. 350,661

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 R **12 Claims**

1. A process for the preparation of organic amides which comprises hydrolyzing an organic nitrile, in an aqueous reaction mixture having [a] *an initial* pH range of 6 to 12.5, in the presence of a catalyst which is a compound of a metal selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium and platinum, at a temperature of from 25° to 250° C.

28,289

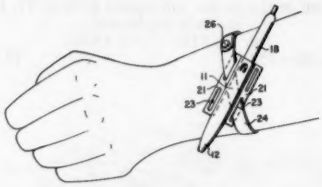
PEN HOLDER ATTACHMENT DEVICE

Forrest I. Calkins, 3340 Allen Court, Santa Clara, Calif. 95051

Original No. 3,627,182, dated Dec. 14, 1971, Ser. No. 882,475, Dec. 5, 1969. Application for reissue May 14, 1973, Ser. No. 359,659

Int. Cl. A45c *11/34*

U.S. Cl. 224—28 D **8 Claims**



1. A holder of the character described comprising a sheath shaped to receive a writing implement, ears projecting laterally on either side of said sheath, said holder formed with an elongated flat surface in back of said ears and said sheath, a piece of fiber having self-adhering adhesive on both surfaces thereof, one said surface adhering to said elongated flat surface, and being removable therefrom, the other said surface covered with a removable protective paper, each said ear being formed with a first long, narrow slot, and a second long, narrow slot spaced longitudinally relative to said first slot, and a wrist-encircling strap fitting through *a slot* [an aperture] in each said ear when said fiber is removed, whereby said strap may fit through the lower slot of one ear and the upper slot of the other ear, disposed at an angle relative to said sheath.

28,290

CURIE POINT MAGNETIC RECORDING PROCESS

Joachim Greiner, Wolfgang Eichler, and Friedrich Krones, Leverkusen, Germany, by Agfa Aktiengesellschaft, Leverkusen, Germany, assignee

Original No. 3,364,496, dated Jan. 16, 1968, Ser. No. 432,796, Feb. 15, 1965. Application for reissue Aug. 23, 1973, Ser. No. 390,777

Claims priority, application Germany, Feb. 29, 1964, A 45,360

Int. Cl. G11b *5/02, 5/86*

U.S. Cl. 360—16 **10 Claims**

1. A process for recording a sequence of *time-varying* magnetic *information* signals on a magnetizable recording member, which member comprises a magnetizable layer containing a magnetizable compound including the steps of

(a) heating the magnetizable recording member onto which [the] *said* magnetic signal is to be recorded to a temperature of at least the Curie point of the magnetizable compound,

(b) subjecting the magnetizable recording member while being kept at said temperature to the magnetic field of [the] *said* magnetic signal to be recorded, and

(c) cooling the magnetizable recording member to a temperature below the Curie point of the magnetizable compound while said member is under the action of the magnetic field of [the] *said* magnetic signal.

28,291

SPRING-LOADED CLAMPING DEVICES FOR FASTENING RAILROAD RAILS

Alf Lennart Borup, Bromma, and Karl Rune Hamrin, Lesjofors, Sweden, assignors to Lesjofors AB, Lesjofors, Sweden

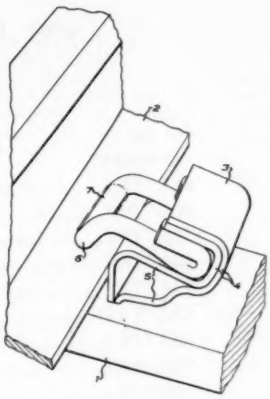
Original No. 3,749,310, dated July 31, 1973, Ser. No. 152,154, June 11, 1971. Application for reissue Oct. 29, 1973, Ser. No. 410,379

Claims priority, application Switzerland, June 12, 1970, 8,162/70

Int. Cl. E01b *9/02*

U.S. Cl. 238—349 **3 Claims**

1. A clamping device for fastening a railroad rail to a support, comprising a fastening which is fixedly arranged in the rail support, and a clamping means disposed between the fastening and the rail foot, wherein the fastening consists of two spring leaves which have their end portions connected together and disposed in the support while the intermediary portions of the spring leaves are bent apart, the spring part facing the support having a large surface of engagement therewith and the other spring having an extended spring travel stroke and the extremities of the two free ends of the spring leaves bearing against one another and forming a substantially



U-shaped holder for one end portion of said clamping means, the other end portion of which is adapted to bear against the rail foot.

PATENTS

GRANTED DECEMBER 31, 1974

ERRATA

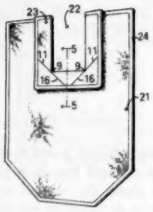
For CLASS	See PATENT NO.
099–499	3,857,328
137–001	3,857,401
137–013	3,857,402
173–134	3,857,448
355–003	3,857,549
273–038	3,857,562
055–029	3,857,686
055–337	3,857,687
055–483	3,857,688
250–544	3,857,779

PATENTS

GRANTED DECEMBER 31, 1974

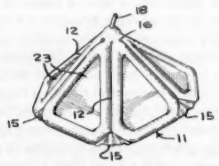
GENERAL AND MECHANICAL

3,857,116
METHOD OF MAKING TOWEL BIBS
Donald W. Meeker, 100 E. Ocean Front, Newport Beach, Calif. 92661
Filed July 23, 1974, Ser. No. 491,163
Int. Cl. A41b *13/10*
U.S. Cl. 2—50 **1 Claim**



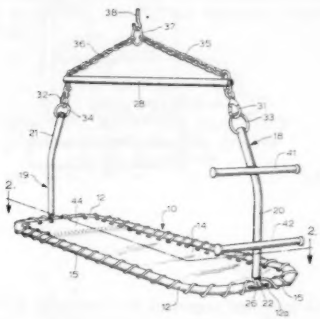
1. The method of making towel bibs which includes providing rectangular sheets of absorbent material positioned with the short sides at the top and bottom, cutting from the center of the top edge of each sheet an inverted Y-shaped slit with an angle of ninety degrees between the branches of the fork in the cut, folding the material adjacent to the inverted Y-shaped slit to the back of the material and thereby producing in the center of the top edge of each sheet a rectangular opening sufficiently large to admit and encompass the base of the neck of the wearer and to allow open access to the neck of the wearer when in place on the wearer, cutting from each of the two bottom corners of each sheet a piece of material in the shape of a right isosceles triangle, attaching the hypotenuse edge of each of the two triangular pieces to each of the two straight edges of folded material formed by the opened branch lines of the inverted Y-shaped slit and thereby completing a flap of uniform width extended from the three borders of the rectangular opening, and binding all the outer edges of the material in one continuous operation.

3,857,117
WATERPROOF APPAREL
Samuel Matis Tenowitz, 58 Pitzer Rd., Glen Austin, Transvaal Province, South Africa
Filed Oct. 1, 1973, Ser. No. 402,631
Claims priority, application South Africa, May 17, 1973, 73/3327; Oct. 6, 1972, 72/7151
Int. Cl. A42b *1/20, 1/18*
U.S. Cl. 2—177 **10 Claims**



1. An article of waterproof apparel comprising an inflatable canopy which is flat in its uninflated state composed of two superimposed sheets of flexible impervious material bondedly secured together along lines defining a plurality of interconnected panels, each panel comprising at least one inflatable area and one non-inflatable area, the inflatable areas each substantially surrounding the non-inflatable areas and being mutually interconnected, and wherein said inflatable areas include a plurality of radially extending areas joined at the center of said article, bifurcated portions at the outer ends of said radially extending areas and linear peripheral portions extending between said bifurcated portions of adjacent radially extending areas, the panels further being arranged to mutually support each other.

3,857,118
STABILIZED PLINTH ASSEMBLY FOR A HYDROTHERAPY TREATMENT SYSTEM
Anthony C. Mamo, Arlington Heights; Donald L. Paulson, Rolling Meadows, and Gustav Ozag, Chicago, all of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed May 29, 1973, Ser. No. 364,468
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 L **5 Claims**

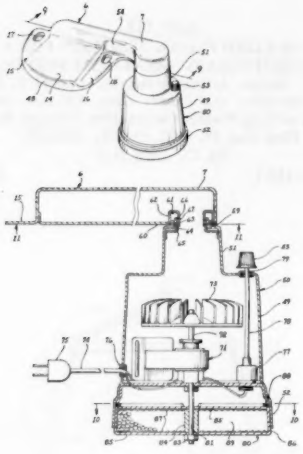


1. A stabilized plinth assembly for supporting a patient partially immersed in a water-filled tank of a hydrotherapy treatment system, wherein the assembly is upwardly connected to and held by a hoist mechanism, comprising:
an elongated plinth having a longitudinal axis and including a generally rectangular rigid open frame with head and foot ends and across which frame flexible material is stretched to support a patient;
a pair of elongated rigid end supports each of which is pivotally coupled to said frame at a respective one of its two ends and on the plinth's longitudinal axis, and each of which supports is pivotable to an upright position wherein at least its lower portion is generally perpendicular to said plinth,
each of said end supports, when held in its upright position, being rigidly locked to said frame so that no relative movement therebetween may occur;
an elongated rigid spreader bar parallel spaced above said plinth and coupled between and to said end supports to maintain said supports locked in their upright positions to enhance the stability, and thereby to preclude tipping, of said plinth when a patient is lying thereon;
and means for upwardly connecting the ends of said spreader bar to the hoist mechanism.

3,857,119
VENTILATING ATTACHMENT FOR WATER CLOSET

Clyde J. Hunnicutt, Jr., 3026 E. Garfield St., Phoeniz, Ariz. 85008

Continuation-in-part of Ser. No. 301,581, Oct. 27, 1972, Pat. No. 3,824,637. This application Nov. 15, 1973, Ser. No. 415,964
Int. Cl. A47k *3/22*; E03d *9/04*, *13/00*
U.S. Cl. 4—213 9 Claims



1. An improved apparatus for ventilating the bowl of a commode within a water closet, said apparatus comprising in combination:

a. a collector unit mounted at the rear of the commode for receiving and channeling gas away from the bowl, said collector unit including:
   1. an inlet aperture extending within the periphery of said bowl;
   2. a hollow neck extending lateral to the commode and serving as a conduit; and
   3. an offset portion disposed at the extremity of said neck, said offset portion including a downwardly directed outlet;

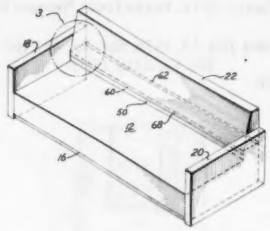
b. a canister depending from said offset portion for drawing gas from the bowl, through said collector unit and exhausting the gas to the environment, said canister including:
   1. impeller means for generating a gas flow;
   2. power means for driving said impeller means; and
   3. filter means for purifying the gas exhausted from said canister;

c. means for detachably connecting said canister to said offset portion, said connecting means being the sole support for said canister; whereby, said collector unit in combination with said canister are supported off the floor of the water closet and serve as a complete unit to withdraw and purify the gases within the bowl of the commode.

3,857,120
SOFA WITH DETACHABLE BOLSTER

Donald J. Acker, 220 Dushane St., Elkhart, Ind. 46514

Filed Aug. 29, 1973, Ser. No. 392,771
Int. Cl. A47c *17/14*, *4/02*
U.S. Cl. 5—12 R 9 Claims

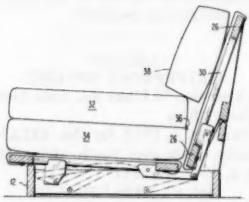


1. A sofa comprising a frame, a seat portion, means supporting said seat portion on said frame, a platform rigidly connected to the frame along the rear of said seat portion and extending a substantial distance in parallel relationship with the rear edge of the seat portion, a back substantially taller than said platform seated on and supported by said platform and projecting generally vertically upwardly from the forward and rear edges of the platform, and fastening means having one part along the lower front and rear edges of said back and another part engageable by said first mentioned part along the front and rear upper margins of said platform for securing said back firmly and releasably in place on the platform.

3,857,121
SOFA BEDS

Walter Clark Rogers, Jr., 3101 N. Main St., High Point, N.C. 27260, and Morton Snitzer, 3301 Albemarle Dr., Greensboro, N.C. 27401

Filed Apr. 2, 1973, Ser. No. 347,310
Int. Cl. A47c *17/14*
U.S. Cl. 5—29 7 Claims



1. In a sofa bed including, a seat, a backrest movably connected to the seat for movement between an upright position extending upwardly at an angle to the seat for use as a sofa and a generally horizontal position extending generally coplanar with the seat for use as a bed, said seat including a frame extending generally in a horizontal plane, a mattress overlying the frame, and connecting means interconnecting the mattress to the frame at a point under the mattress and spaced inwardly from the front edge portions of the mattress to define a recess between the mattress and the front edge portions of the frame for receiving a bedding sheet or the like covering the mattress and tucked into said recess, and wherein said connecting means extends continuously along the front and sides of the mattress and frame but spaced inwardly from the edges thereof to define a continuous recess along the front and sides thereof for receiving a sheet in the recess, and wherein said

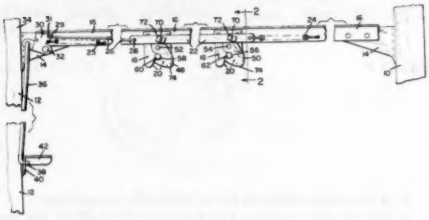
backrest includes a frame and a mattress loosely positioned on said backrest frame when the backrest is in horizontal position for use as a bed, said backrest mattress being removable from the backrest for placement on the seat mattress when the backrest is in the upright position for use as a sofa, and wherein said seat and backrest mattresses have a generally rectangular shape with the depth of the mattresses at each of the corners thereof being of the same dimension.

3,857,122

SAFETY TOE TRIP FOR CRIB DROP SIDES

Robert G. Bryant, Gardner, Mass., assignor to Gem Industries, Inc., Gardner, Mass.

Filed Jan. 11, 1974, Ser. No. 432,770
Int. Cl. A47d *9/00*
U.S. Cl. 5—100 **9 Claims**



1. A safety latch construction for a crib having a drop side, said crib including a stabilizer bar,

a movable latch on the stabilizer bar and means to be latched thereby on the drop side, resilient means associated with said latch and tending to maintain the same in latching condition with respect to said means,

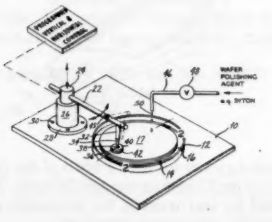
and a foot pedal, said foot pedal having an operative connection with respect to said latch to move it to release said means, and a second resilient means for said foot pedal tending to maintain the same in a position wherein the latch is in its latching position, said second resilient means being isolated fron the latch, wherein the connection between the movable latch and the pedal comprises an elongated longitudinally movable bar and a pivoted connection between the bar and the pedal.

3,857,123

APPARATUS FOR WAXLESS POLISHING OF THIN WAFERS

Robert J. Walsh, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 82,673, Oct. 21, 1970, abandoned. This application Oct. 27, 1972, Ser. No. 301,554
Int. Cl. B24b *7/00*
U.S. Cl. 51—131 **4 Claims**



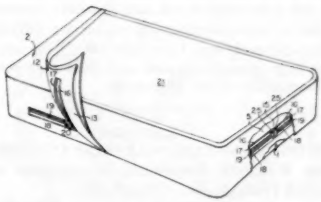
1. Apparatus for polishing a wafer, said apparatus comprising a polishing turntable including a polishing pad having first and second polishing surfaces, a rotatable, wafer pressure disk for pressing the surface of a wafer against either of said polishing surfaces, said pressure disk having a wafer retention pad for retaining a wafer beneath said pressure disk and in contact with either of said polishing surfaces during polishing of said wafer, means for causing rotation of said turntable to cause relative movement of said polishing surfaces with respect to the surface of said wafer when in contact with either of said polishing surfaces, means for positioning said pressure disk for initial contact of said wafer with said first polishing surface, and for repositioning said pressure disk for subsequent contact of said wafer with said second polishing surface without interrupting the contact of said wafer with said polishing pad, said first polishing surface being adapted to provide initial polishing of said wafer and having coefficients of static and kinetic friction with respect to said wafer both of which are less than the coefficient of static friction of said wafer retention pad with respect to said wafer, whereby said wafer is retained under said retention pad and in contact with said first polishing surface both prior to and during rotation of said turntable, said second polishing surface being adapted to provide finish polishing of said wafer and having a coefficient of kinetic friction with respect to said wafer which is less than the coefficient of static friction of said wafer retention pad with respect to said wafer but said second polishing surface having a coefficient of static friction with respect to said wafer which is greater than the coefficient of static friction of said wafer retention pad with respect to said wafer, whereby said wafer is retained under said retention pad and in contact with said polishing surface during polishing but is removed by frictional force from under said retention pad when said turntable is brought to rest.

3,857,124

BEDCLOTHES

Belva D. Hadley, Rt. 2, Box 97, Scio, Oreg. 97374

Filed July 2, 1973, Ser. No. 375,870
Int. Cl. A47c *23/00*
U.S. Cl. 5—334 R **3 Claims**



1. In combination,

a mattress having upper and lower surfaces, a pair of longitudinal side edges and a pair of end edges,

a bottom sheet removably positioned on said mattress,

said bottom sheet having an upper surface superimposed upon the upper surface of said mattress and having a pair of longitudinal side edge portions and a pair of end edges enclosing the respective side edges and end edges of said mattress,

first fastening means on the side edge portions of the bottom sheet,

top sheet means overlying said bottom sheet and having a pair of downturned longitudinal side edge portions hanging over and covering the fastening means and a downturned end portion overlying the corresponding portions of said bottom sheet,

and second fastening means secured to inner face portions of the side edge portions of the top sheet means and releasably secured to the first fastening means for removably attaching top sheet means to the bottom sheet,

the top sheet means covering both fastening means.

3,857,125

SLEEPING BAG CONSTRUCTION

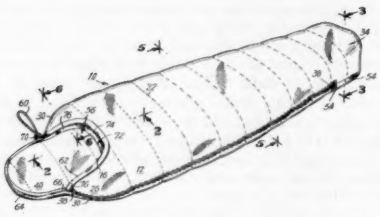
Harry Hunt, Boulder, Colo., assignor to Alpine Designs, Boulder, Colo.

Filed May 21, 1973, Ser. No. 362,497

Claims priority, application Sweden, June 1, 1972, 7223/72; June 2, 1972, 7293/72; Sept. 21, 1972, 12215/72; Jan. 12, 1973, 7300439/73

Int. Cl. A47g *9/00*

U.S. Cl. 5—343 11 Claims



1. Sleeping bag comprising inner and outer shell layers formed of thin, highly flexible, substantially non-elastic fabric, baffle fabric means extending therebetween defining a plurality of separate compartments therewithin, and a plurality of portions of a highly resilient insulating fill material having the characteristics of down contained within said compartments urging separation of said inner and outer shell layers, defining an insulated bag-like structure extending from a neck opening, wherein said inner and outer shell layers within a shoulder encompassing region are non-differentially cut and seamed generally curvalinearly extending medially across the shoulder region between the side edges of the bag and the side edges of a neck opening to define a contoured shoulder portion enabling the outer shell to be fully lofted thereat by pressure of the fill material away from an occupant's shoulders while the inner shell is lofted inwardly thereby to self-adjustably accommodate to the shoulders of such occupant and wherein said inner and outer shell layers, said shoulder encompassing region and a foot encompassing region are differentially cut enabling said outer shell to be fully lofted from said inner shell so that body pressures against said inner shell produce minimal compression of the fill thereat.

3,857,126

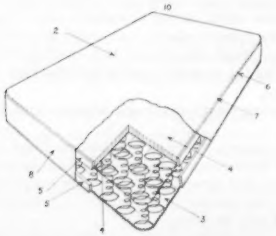
IGNITION RESISTANT MATTRESS CONSTRUCTION

Douglas Woodruff, Woodstock, Ill., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

Filed July 16, 1973, Ser. No. 379,618

Int. Cl. A47c *23/00*, *27/00*

U.S. Cl. 5—345 R 15 Claims



1. In a mattress construction comprising an outer casing, a yieldable interior filling having inherent flammability resistance to a lighted cigarette, a support core and a flange circumscribing the periphery of said mattress, the improvement which comprises providing said flange as a laminate of a scrim substrate and aluminum foil to render said mattress resistant to ignition by a lighted cigarette.

3,857,127

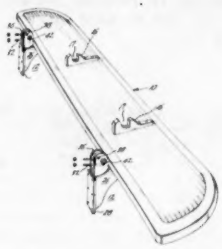
BOARDING PLATFORM FOR BOATS

Roger L. Hendrickson, Rt. 1, Bradshaw Rd., Mount Vernon, Wash. 98273

Filed Feb. 11, 1974, Ser. No. 441,011

Int. Cl. B63b *23/32*

U.S. Cl. 9—1 R 6 Claims



1. A boarding platform for a boat hull, comprising:

a pair of spaced-apart brackets for the hull of the boat disposed in overlying relation to the waterline thereof;

each said bracket having vertically disposed base structure adjacent the hull including an upstanding pair of spaced-apart ears between which extends a through pin disposed in a generally horizontal axis parallel to the hull surface; each said bracket supporting in cantilevered fashion, below said ears and above the lower reaches of said base structure, an outstanding arm; the upper surfaces of said bracket arms lying in a common plane;

an elongated plank secured to said arm upper surfaces in overlying substantially parallel relation to the water line of said boat hull; and

a bolt engaged about each said through pin between the upstanding ears of a bracket and anchored inwardly to said hull.

3,857,128

WHEELED CARRIER FOR SAILING VESSEL

William James Gilster, 6800 Telegraph, Apt. 18, Birmingham, Mich. 48010

Filed Dec. 12, 1973, Ser. No. 423,889

Int. Cl. B63c *13/00*

U.S. Cl. 9—1 T 7 Claims

1. A wheeled carrier for sailing boats of the type having a transom and a deck overhanging said transom, and a rudder fitting carried by said transom for removably supporting a rudder assembly, said carrier comprising:

a carrier body positionable in an upright position against said transom;

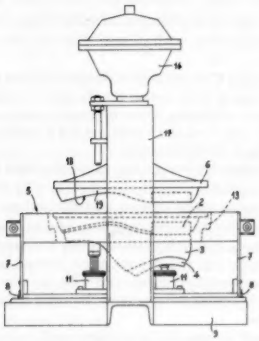
wheel means;
means for rotatably mounting said wheel means to the lower portion of said carrier body;
the upper portion of said carrier body having support means for supportably engaging the underside of said overhanging deck when said carrier body is positioned in said upright manner; and
means carried by said carrier body for releasably attaching said carrier body to said rudder fitting when said carrier body is positioned in said upright manner such that said wheel means are disposed below said transom to support the stern of said boat above the ground.

3,857,129

DEVICE FOR ASSEMBLING SHOE COMPONENTS

Jean-Gabriel Barre, Lyon, France, assignor to Centre Technique Du Cuir, Lyon, France

Filed Mar. 26, 1973, Ser. No. 345,218
Claims priority, application France, Mar. 31, 1972, 72.12192
Int. Cl. A43d
U.S. Cl. 12—1 F **8 Claims**



1. An apparatus for automatically assembling a sole and an upper of a shoe, comprising:
a substantially rectangular frame having an inner face with an outline accommodating exactly the outer periphery of of said upper along a marginal assembling portion thereof, said inner face being formed with a peripheral groove adapted to receive the edge of a sole to be applied to said upper; means supporting a last within said frame; and means for supporting said sole within said frame,
the inner face of said frame being composed of flexible soft material moldable to the configuration of a shoe to be formed.

3,857,130

SUSPENSION BRIDGE

Ramiro Sofronie, Bucharest, Rumania, assignor to Intreprindera Industriala De Stat Energo Reparatii, Bucharest, Rumania

Filed Apr. 10, 1972, Ser. No. 242,357
Int. Cl. E01d *11/00*
U.S. Cl. 14—19 **2 Claims**

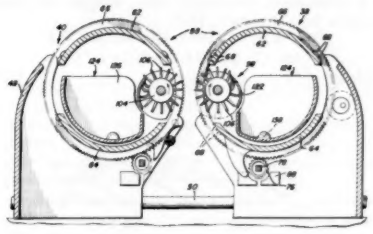
1. A suspension bridge comprising:
a pair of upright support towers;
at least three horizontally spaced catenary cables spanned longitudinally between said towers;
a plurality of connecting cables extending transversely between said catenary cables and connected thereto at mutal junctions, said cables defining a cable net of longitudinally upwardly concave and transversely downwardly concave curvature;
a plurality of hangers formed by extensions of the connecting cables and depending from the outermost two of said catenary cables; and
an elongated load suspended from said hangers below said net, said towers being Y-shaped with upwardly diverging arms, said load being received in the crotches between the Y-arms of said towers, said cable net being supported by said arms, each tower having a downwardly concave upwardly convex arch spanning its arms, said catenary cables resting on said arch and being provided at their ends with means anchoring them to the ground, said outermost catenary cables being spaced apart by a transverse width several times greater than the transverse width of said load, said cables being under tension against each other and against said load whereby said net is under stress.

3,857,131

MEAT HANDLING EQUIPMENT

Herman F. Russell, Detroit, Mich., assignor to The Hobart Manufacturing Company, Troy, Ohio

Division of Ser. No. 177,302, Sept. 2, 1971, , which is a continuation-in-part of Ser. No. 877,229, Nov. 17, 1969, Pat. No. 3,606,628. This application May 18, 1973, Ser. No. 361,786
Int. Cl. A22c *17/08*
U.S. Cl. 15—3.17 **13 Claims**



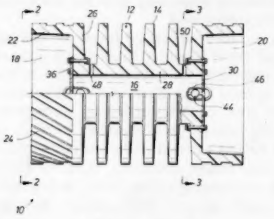
1. In a meat cleaning machine, a meaat cleaning brush comprising at least one brushing unit, said unit including a central hub and a plurality of flexible scraping members supported at one end by said hub and extending outwardly therefrom, each member having a wide, generally continuous, flat scraping surface on the other end thereof, and including a scraper plate located lengthwise along said brush and having a leading edge located within the circle defined by the outer edges of the flexible scraping members and a trailing edge located outside the circle defined by the outer edges of the flexible scraping members and a body portion joining said leading and trailing edges to unflex said scraping members slowly and smoothly during release of engagement between said scraping members and said scraper plate, avoiding possibly detrimental flapping action.

3,857,132

PIPELINE PIG OPERABLE IN TWO DIRECTIONS

Kenneth M. Knapp, and Charles C. Knapp, both of P.O. Box 2261, Houston, Tex. 77001

Filed Nov. 24, 1972, Ser. No. 309,059
Int. Cl. B08b 9/04
U.S. Cl. 15—104.06 R 11 Claims



1. A pig for use in a pipeline comprising:

a body formed of resilient material and having at least one outwardly directed fin which is adapted to contact the internal periphery of a pipe;

said pig body further including a forward and rearward facing surface adapted to contact the internal periphery of a pipe and across which a pressure differential in the pipeline creates a pushing force enabling the pig to travel through the pipeline; and,

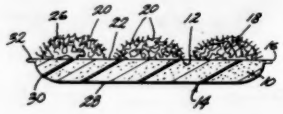
passage means in said pig extending between said faces and including a blockage means cooperating with said passage means to admit fluid pressure from one face of said pig body to create a pulling force acting on said body away from said one face which receives a pushing force from pressure differential and wherein said blockage means acts selectively at either end to form a pulling force at least one-half the length of said body from the pushing force.

3,857,133

COMBINATION SCRUBBING AND WIPING SPONGE

Carl J. Linenfelser, Brooklyn, Mich., assignor to Brooklyn Products, Inc., Brooklyn, Mich.

Filed Mar. 29, 1973, Ser. No. 345,884
Int. Cl. A47l 13/16; B32b 5/18
U.S. Cl. 15—118 1 Claim



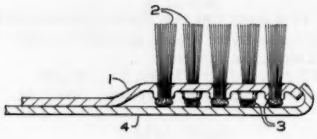
1. A scrubbing and wiping sponge comprising, in combination, a body of open cell foamed polyurethane ester having a periphery and first and second sides oppositely disposed with respect to each other, a relatively thick sheet of open cell reticulated foamed polyurethane ester having an exterior side and an interior side disposed over said body first side having cells of a dimension greater than that of said body foam and having a plurality of sharp projections formed thereon defining an abrasive outer surface at said exterior side, a plurality of elongated thermal joining strips defined in said foam sheet by compressing portions of said sheet exterior and interior sides into engagement with said body first side and thermally bonding said sheet to said body only at spaced locations defining said sheet into an embossed pattern, said sheet and said body also being thermally bonded throughout said body periphery, said strips comprising two sets of strips each comprising parallel spaced linear strips, the strips of said sets obliquely intersecting defining a raised self-cleaning embossed diamond pattern on said sheet, and said foam body at said second side defining a skin layer of higher density foam resistant to abrasive wear.

3,857,134

TUFTED STYLE BRUSH

Carlton C. Wells, Baltimore, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 19, 1973, Ser. No. 352,837
Int. Cl. A46b 3/16
U.S. Cl. 15—199 7 Claims



1. A brush comprising:

A. a plate having a plurality of holes pierced therethrough, said plate being relatively smooth on the obverse side thereof, and having flanged or raised areas circumferentially surrounding each of said holes on the reverse side thereof;

B. substantially U-shaped tufts located in each of said holes and extending from below the flanged or raised areas to above said relatively smooth obverse side, wherein the apices of said U-shaped tufts extend completely through said flanged or raised areas;

C. a first means for preventing said tufts from being pulled through said holes from the obverse side of said plate, said means pressing against said flanged or raised areas and extending through the apices of said U-shaped tufts, said means comprising substantially U-shaped, relatively stiff components which have been formed into generally ring-shaped configurations and wherein the diameters of said configurations are greater than the diameters of said holes; and

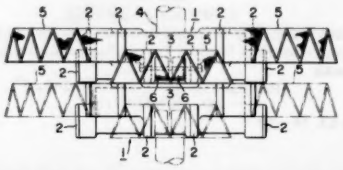
D. a second means for preventing said tufts from being pulled through said holes from the reverse side of the plate.

3,857,135

VEHICLE POLISHING APPARATUS

Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Nagoya-shi, Japan

Filed July 3, 1973, Ser. No. 376,212
Claims priority, application Japan, Sept. 16, 1972, 47-106980
Int. Cl. B24d 13/06; B60s 3/06
U.S. Cl. 15—230.14 1 Claim



1. A cylindrical rotary buff assembly for use in vehicle polishing apparatus, comprising: a rotatable shaft, a stack of relatively short cylindrical segments closely and removably fitted over said shaft, each of said cylindrical segments being formed on their outer peripheral surfaces with a plurality of

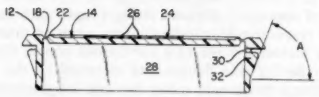
circumferentially spaced, radial projections, adjacent ones of said projections defining recesses; a plurality of radially fluted fan-shaped pliable elementary buffs being positioned in the plane of said cylindrical segments, each of said buffs having an inner end and an outer end and expanding outwardly from its inner end to its outer end with its outer peripheral edge formed in zigzag form, said buffs being individually removably fixed at their inner ends in alternate ones of said recesses of said projections by fastener means, said elementary buffs on each of said cylindrical segments being spaced from each other at their adjacent outer ends and being in staggered relation with those on adjacent ones of said cylindrical segments.

3,857,136

CABLE BUSHING APPARATUS

Carl J. Dean, Southbridge, Mass., assignor to Barry-Wright Corporation, Watertown, Mass.

Filed July 6, 1973, Ser. No. 376,969
Int. Cl. B65d *7/48*
U.S. Cl. 16—2 **5 Claims**



1. Cable bushing apparatus comprising,
means defining a frame,
means defining a central removable portion at least partially enclosed by said frame and spaced therefrom,
means defining a plurality of thin strips spanning the distance from the frame to said central removable portion for removably and hingeably supporting said central portion,
said thin strips being breakable with the tip of a knife and sufficiently flexible to function as a hinge when said central portion is otherwise free to move and may then function as a hinged door,
means defining an elongated protrusion of the frame coextensive therewith,
and means defining a plurality of yieldable tabs along an outer surface of said protrusion arranged adjacent to said frame to define multiple pairs of panel gripping jaws,
said frame and central removable portion defining a common plane and said protrusion being arranged orthogonally to said common plane.

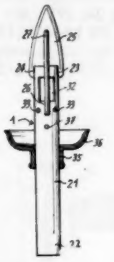
3,857,137

PROCESS AND DEVICE FOR EXTRACTING BLOOD FROM SLAUGHTERED ANIMALS

Roger Baud, Prangins(Vaud), Switzerland

Filed Dec. 13, 1972, Ser. No. 314,597
Claims priority, application Switzerland, Dec. 22, 1971, 18792/71; Mar. 8, 1972, 3487/72
Int. Cl. A22c
U.S. Cl. 17—1 C **5 Claims**

1. A device for extracting blood from slaughtered animals comprising a cutting tool including a tubular body open at first and second ends, a blade at the first end of said tubular body, a crown-like array of rods removably mounted on said tubular body and disposed on either side of said blade, a guard piece adjacent the first end of said tubular body and projecting laterally therefrom, said guard piece including a sleeve surrounding said tubular body and slidable thereon, said sleeve flared outwardly toward said blade to provide a cup-shaped portion to be applied in a substantially fluid-tight manner against the neck of an animal to be bled, means connecting the second end of the body with a receptacle, and means for maintaining the receptacle at low pressure and for applying a suction to a cut made by piercing said blade into an animal, for example, in its neck in the region of the arch of the aorta



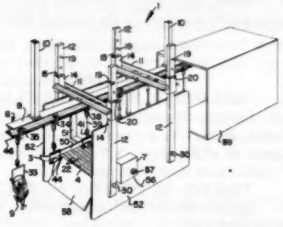
and the upper vena cava to activate the flow of blood through said tubular body into the recipient.

3,857,138

ELECTRONIC RELAXER AND STABILIZER

Garland McWhirter, deceased, late of Kansas City, Mo., assignor to Jerry McWhirter, by said Nell J. McWhirter

Filed Jan. 22, 1973, Ser. No. 325,664
Int. Cl. A22b *3/08*
U.S. Cl. 17—11 **11 Claims**



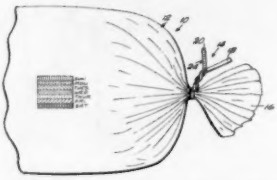
1. Apparatus for electrically shocking poultry in a poultry processing operation comprising:
a. a poultry conveyor having a track with a plurality of poultry supporting shackles spaced therealong and movable in a defined path, said shackles engaging legs of poultry to support same head down;
b. an electrical conductor positioned in a portion of said path for electrical circuit making contact with said poultry as it moves thereby;
c. an electrically conductive grid located in said portion of the path and spaced below said shackles a distance for contact with the heads of the poultry suspended from said shackles as they move thereby whereby said poultry heads electrically contact said grid during electrical contact between the poultry and said conductor, said grid having upwardly facing surface portions inclined and having a plurality of through openings permitting drainage of waste material from said upwardly facing surface portions;
d. means applying an electric potential difference between said conductor and said grid whereby poultry in electrical contact with said conductor and said grid complete an electric circuit therebetween and is shocked by an electric current passing into portions of the poultry between the conductor and the grid; and
e. means electrically insulating said grid and said conductor from said track.

3,857,139

BI-COLORED WRAPPER TWIST TIE

Jack Bond Turner, 234 Pinecrest Dr., Miami Spring, Fla. 33166

Filed July 30, 1973, Ser. No. 384,065
Int. Cl. B65d 77/18, 65/04
U.S. Cl. 24—30.5 T 1 Claim



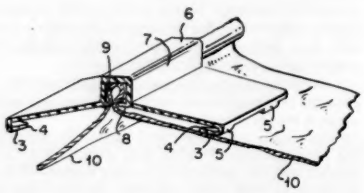
1. A Twist Tie Strip for use in providing an air tight closure for the normally open end of a wrapper of the types of bakery products such as bread, rolls, buns, etc., comprising an elongated, narrow strip of any suitable material with a thin wire embedded therein generally along the length of its longitudinal axis, said strip being generally, vertically divided into two halves defined by two contrasting colors, wherein said strip is provided in a plurality of different contrasting colors one color of each strip designating a particular day of the week on which the product in the wrapper was baked, including a color key on said wrapper, associated with said plurality of different contrasting colors to identify the days of the week.

3,857,140

DETACHABLE BANDAGE CLASP

Harry H. Leveen, Brooklyn, N.Y., assignor to Jeanette L. Rubricius; Robert F. Laveen; Eric G. Laveen; Frank A. Santageta, all of Brooklyn, N.Y. and Patrick J. Joyce, Stamford, Conn., part interest to each

Filed Feb. 28, 1973, Ser. No. 336,778
Int. Cl. A44b 9/00; A61f 13/00, 15/00
U.S. Cl. 24—87 TB 6 Claims



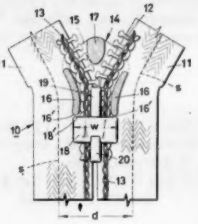
1. A fastener for bandages which comprises a plastic resilient frame consisting of a centrally positioned set of jaws having interposed therebetween a tortion actuated spring hinge and a set of lateral wing plates which control the opening and closing of the said jaws when pressures are applied or released thereon, a bandage securing means positioned distally on each lateral wing plate and adapted to engage an underlying layer of wrapped bandage, said jaws capable of clasping releasably a segment of the bandage in an opposed set of teeth located thereon and holding the same until released by a second application of torsion.

3,857,141

END STOP FOR SLIDING CLASP FASTENERS

Hiroyuki Ebata, No. 1-5-25, Shinkanaya, Uozu-ohi, Toyama-Ken, Japan

Filed July 17, 1973, Ser. No. 379,964
Claims priority, application Japan, July 18, 1972, 47-85301
Int. Cl. A44b 19/00
U.S. Cl. 24—205.11 F 5 Claims



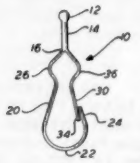
1. In a sliding clasp fastener of the type which comprises a pair of oppositely disposed stringer tapes each carrying along their respective longitudinal edges a row of interlocking fastener elements made of a continuous plastic filament and a slider having side flanges and mounted on the fastener for reciprocal movement along the said longitudinal edges, the improved bottom end stop for restricting the movement of the slider which comprises a thermoplastic strip laid over a group of fastener elements adjacent the bottom end of the fastener, means securing said strip to said fastener, said strip being substantially square in shape and having a width corresponding substantially to the distance between the side flange ends of the slider, and a tongue formed by deforming a group of interengaged parts of fastener elements adjacent to the forward marginal end of said square strip, said tongue being joined integrally with said strip.

3,857,142

SNAP HOOK

Marvin S. Hills, 125 Springfield Rd., Elizabeth, N.J. 07208

Filed Aug. 27, 1973, Ser. No. 391,913
Int. Cl. A44b 13/02; B21f 13/00
U.S. Cl. 24—237 7 Claims



1. A unitary suspendable one piece snap hook comprising a head portion,

a shank portion,

the head portion being affixed to one end of said shank portion wherein the maximum thickness of said head member measured perpendicular to the principal axis of said shank portion exceeds the thickness of said shank portion measured perpendicular to the axis of said shank portion,

said head portion being anchorable in a suitable external retaining means

a body portion unitary with said shank portion comprising a shorter segment and a longer segment extending from the other end of said shank portion in divergent relation to each other,

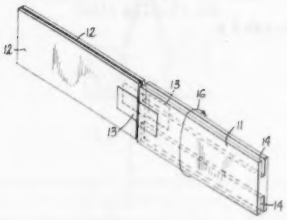
said shorter body segment and said longer body segment lying in substantially a common plane with said shank portion, the end of said longer segment distant from the shank portion being bent upon itself to over-lie the end of said shorter segment at its end distant from the shank to form a loop.

3,857,143

YARN MEASURING CUTTER

Daniel A. Montory, and Katherine L. Montory, both of 213 Oak St., Waterbury, Conn.

Filed Mar. 11, 1974, Ser. No. 449,852
Int. Cl. D04d *7/08*
U.S. Cl. 28—2 **4 Claims**



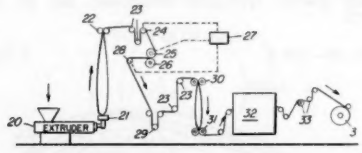
1. A yarn measuring cutter comprising an elongated body porton having a plurality of longitudinal slots in its surface, the perimetric distances between adjacent slots in either direction being equal, each said slot being of a size to receive a cutting tool, and means for clamping yarn against the body portion in areas between said slots.

3,857,144

METHOD OF EMBOSSING LIMP PLASTIC SHEET MATERIAL

Franz Bustin, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 159,531, July 2, 1971, Pat. No. 3,760,940, which is a continuation of Ser. No. 808,922, March 20, 1969, abandoned. This application Aug. 23, 1972, Ser. No. 283,016
Int. Cl. D06c *23/04*
U.S. Cl. 28—72 R **19 Claims**



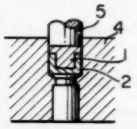
1. A method for embossing limp plastic sheet material suitable for forming a structure which comprises feeding the material to a rotating roll provided with a multiplicity of depressions at a rate relative to the linear peripheral speed of the roll to permit the embossing of said material, and pressing the material into contact with the curved surface of the roll and into the depressions to emboss the sheet material thereby allowing for the production of a continuous roll of embossed limp bag structure.

3,857,145

METHOD OF PRODUCING SPARK PLUG CENTER ELECTRODE

Terumoto Yamaguchi, Anjo, and Kanemichi Izumi, Oobu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Aug. 1, 1972, Ser. No. 277,044
Claims priority, application Japan, Apr. 14, 1972, 47-38172
Int. Cl. F23q *3/70;* **H01t** *13/00*
U.S. Cl. 29—25.12 **5 Claims**



1. A method of producing a spark plug center electrode of the type which comprises a core member consisting of a good heat conducting metal having a corrosion-resistant metal enclosing the sparking end portion and the side portions thereof, said method comprising the steps of:

forming said good heat conducting metal into a protrudent shape by only one plastic-working step, the protrudent portion of the shaped good heat conducting metal being at least as great as one-half the height of said shaped good heat conducting metal,

forming a corrosion-resistant metal piece into a cup shape by only one plastic working step, the depth of the cavity of said cup-shaped metal being at least as great as one-half the height of said cup-shaped metal,

preparing an extrusion metal by fitting the protruding portion of said protrudent shaped good heat conducting metal piece into the recess portion of said cup-shaped corrosion resistant metal piece, and

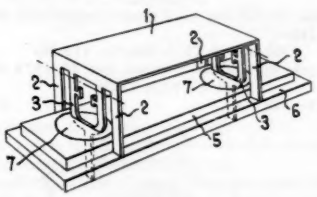
shaping said extrusion metal into a rod formed by the process of cold extrusion, wherein said good heat conducting metal is covered by said corrosion resistant metal.

3,857,146

METHOD OF MAKING A QUARTZ BAR RESONATOR

Jean Engdahl, Bienne, Switzerland, assignor to Societe Suisse Pour L'Industrie Horlogere Management Services SA, Bienne Canton, Berne, Switzerland

Filed Apr. 10, 1973, Ser. No. 349,674
Claims priority, application Switzerland, Apr. 13, 1972, 5472/72
Int. Cl. B01j *17/00*
U.S. Cl. 29—25.35 **9 Claims**



1. A method of fabrication of a quartz bar resonator comprising the steps of forming at least a pair of spaced, forked electrodes interconnected by a blank in a single metallic sheet, folding said electrodes with respect to said blank, fixedly supporting at least a part of each of said electrodes from a base plate, removing said blank leaving said electrodes separately extending from said base plate, mounting a quartz bar

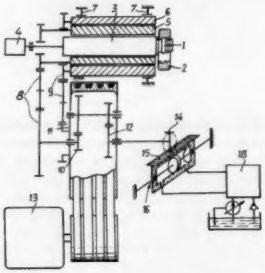
at one end on one of said spaced electrodes and at the other end on another of said spaced electrodes, and connecting said quartz bar to said electrodes.

3,857,147

METHOD OF MANUFACTURING BEARING RACES BY ROLLING

Jean Gerat, Annecy, France, assignor to Societe Nouvelle De Roulements, Annecy, France

Filed July 9, 1973, Ser. No. 377,653
Claims priority, application France, Aug. 9, 1972, 72.28787
Int. Cl. B21h *1/12*
U.S. Cl. 29—148.4 R **2 Claims**



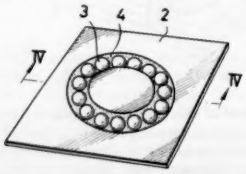
1. Method of rolling outer races of bearings in a die by means of a rolling tool roller operating under overhanging conditions in a race blank to be rolled, wherein a race blank having a smaller diameter than said die is subjected to a cold treatment comprising the following steps: rotatably driving the tool roller on itself at a speed corresponding to its rolling speed within the blank; causing the tool roller to penetrate into the blank until it engages the entire rolling surface, by producing a constant-stress feed, after absorbing its elastic deformation; rolling the blank in the die by producing an additional feed under constant stress of the tool roller, until the blank fills completely the die with its outer surface; driving the blank laterally by producing an additional feed under constant stress, this action being followed by a gauging rolling action without any feed until the final dimensions of the race are obtained; and producing a slow initial backward movement for absorbing the strain distortions of the means driving the roller tool in order to preserve the aforesaid gauging.

3,857,148

METHOD OF ASSEMBLING A FULL TYPE BALL BEARING

Toshio Hata, 14-403, No. 11, 1-chome, Denenchofu, Ohta-ku, Tokyo, Japan

Filed Nov. 6, 1973, Ser. No. 413,383
Claims priority, application Japan, Jan. 20, 1973, 48-8284
Int. Cl. B23p *11/00*
U.S. Cl. 29—148.4 A **2 Claims**



1. A method of assembling a full type ball bearing device which comprises the steps of:

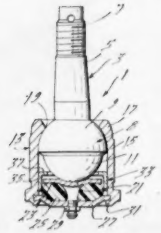
covering a ring like arrangement of a required quantity of grease and a required number of balls embedded in the grease with a thermoplastic resin film to form a thermoplastic resin ring body; mounting the thermoplastic resin ring body between races of a bearing, rotating the bearing; the rotative force generating a frictional effect at the contact track surfaces of the races with the thermoplastic resin ring body and rupturing the resin film of the thermoplastic resin ring body and thus disposing the grease embedded balls in selective operative locations in the bearing races.

3,857,149

METHOD OF MAKING A BALL JOINT

Morris Hassan, Trenton, N.J., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 303,728, Nov. 6, 1972,. This application Dec. 3, 1973, Ser. No. 421,309
Int. Cl. B23p *11/00*
U.S. Cl. 29—149.5 B **2 Claims**



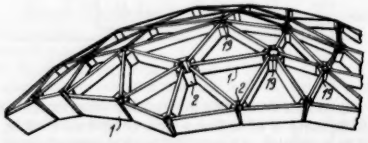
1. A method of making a ball joint comprising the steps of placing a stud having a ball portion through an opening in a housing having a socket, forcing the ball portion of said stud to seat in said socket and placing a retainer in said housing with a radially extending portion thereof a predetermined distance from a specified point on the ball portion, placing a pressure plate against said ball portion with one face thereof being said predetermined distance from said radially extending portion and resiliently holding said pressure plate against said ball portion while forming a closure in the housing.

3,857,150

METHOD OF ASSEMBLING A FRAMEWORK

Pierre Faucheux, Paris, France, assignor to Etablissement Fresa, Vaduz, Liechtenstein

Filed Jan. 24, 1973, Ser. No. 326,273
Claims priority, application Switzerland, Jan. 28, 1972, 1291/72
Int. Cl. B23p *17/00*
U.S. Cl. 29—155 R **5 Claims**



1. Method of assembling a spherical framework including a plurality of rib members, comprising fastening at least a portion of its rib members to one another at their ends by means of wedge shaped elements, and driving a member of generally

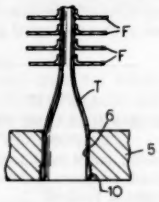
frustoconic shape into the framework at the point of convergence of at least three rib members to render it rigid.

3,857,151

METHOD OF MAKING A RADIATOR CORE

Fred M. Young, and William V. Astrup, both of Racine, Wis., assignors to Young Radiation Company, Racine, Wis.

Filed Oct. 15, 1973, Ser. No. 406,388
Int. Cl. B21d *53/02*; B23p *15/26*
U.S. Cl. 29—157.3 B 4 Claims



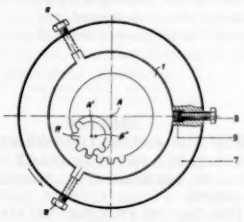
1. The process of making a radiator core having flat tubes with circular cross section ends in complementary holes in a header plate comprising, assembling fins on the flat tubes and securing them thereto, expanding and forming the ends of the flat tubes into circular cross section by pressing a tool into said ends without rotating the tool and without work hardening thereof, forming threads of a size of about 40 threads per inch in said holes of said header plate in which the circular ends are to be inserted, inserting said circular ends in said threads, expanding said circular ends to cause the metal of said ends to be deformed into said threads of said holes and create a fluid tight and solderless joint between said tube ends and said header plate.

3,857,152

TOOTHED COUPLING FOR ROTATABLE MEMBERS

Albin Wolf, Augsburg, Germany, assignor to Zahnraderfabrik Renk AG, Augsberg, Germany

Division of Ser. No. 241,550, April 6, 1972, Pat. No. 3,803,872. This application Jan. 2, 1974, Ser. No. 429,764
Int. Cl. B23p *15/14*
U.S. Cl. 29—159.2 5 Claims



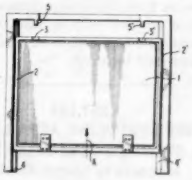
1. A method of making a gear comprising the steps of:
elastically deforming a circular blank to impart a noncircular shape thereto;
machining teeth in the deformed blank in a circular array; and
restoring said blank to its original shape whereby said circular array of teeth becomes noncircular.

3,857,153

FILM CASSETTE COVER OPENER

Sunichi Takiguchi; Yasuhiko Satoyoshi; Shinji Hamada; Takeshi Nakamura; Sadaaki Koba, and Noboru Shimoda, all of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1973, Ser. No. 352,818
Claims priority, application Japan, Apr. 19, 1972, 47-39470
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 D 10 Claims



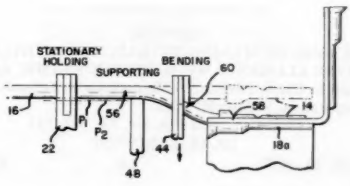
1. A cover opener for use with a film cassette having a cover hingedly overlying the side of the cassette, the improvement wherein:
said cover opener comprises guide means for slidably supporting said cassette for movement longitudinally on said guide means and at right angles to the hinge axis and at least one projection carried by said guide means positioned within the path of movement of said cassette and facing the leading end of said cassette opposite that end to which the cover is hinged, and a notch or hole within the leading end of said cassette in alignment with said projection to permit entrance of a cover opening projection.

3,857,154

APPARATUS FOR POSITIONING AN END OF A BENDABLE WIRE-LIKE ARTICLE AT A PREDETERMINED LOCATION ON ANOTHER ARTICLE

James Woodrow Hammond, Camp Hill, and Eugene Phillip Loomis, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 7, 1973, Ser. No. 367,916
Int. Cl. H01r
U.S. Cl. 29—203 P 9 Claims



1. Apparatus for displacing the free end of a bendable wire-like article to a predetermined location relative to another article; said apparatus comprising:
first and second spaced apart means for supporting spaced apart first and second portions of said wire-like article, said first and second spaced apart portions of the wire-like article being remote from its free end, said free end being disposed above said predetermined location when said wire-like article is supported only by said first and second means; and
positioning means for engaging and moving a third section of said wire-like article to displace its free end to said predetermined location, said third section being located between and located away from said second section and

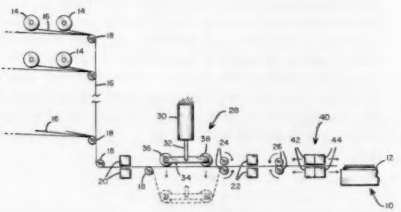
said free end of the wire-like article, said positioning means including opposed members movable from an initial spaced apart position through an overlapping position to a final operative position, and means operative to move said opposed members towards and away from each other, the parts being so arranged and constructed that the third section of said wire-like article is initially engaged and moved into a position in vertical alignment with said predetermined location as said opposed members are moved from their spaced apart position to their overlapping position, continued movement of said opposed members from their overlapping position to their final operative position moving said third section downwardly to cause the free end to be placed downwardly to said predetermined location.

3,857,155

CORE STRINGING APPARATUS

Ronald A. Beck, Bloomington, and Dennis L. Breu, Stillwater, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,256
Int. Cl. H05k *13/04*; **B23p** *19/04*
U.S. Cl. 29—203 MM **4 Claims**



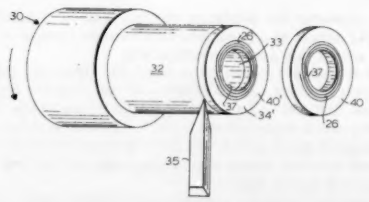
1. In a machine for threading filaments simultaneously through a plurality of apertured elements of the type including means for holding said elements in at least one row with their apertures aligned, means for supplying a continuous filament for said row; and a pair of drive rollers adapted to frictionally engage said filaments for advancing said filaments into said aligned apertures, the improvement comprising: means cooperating with said rollers for imparting a pulsating step motion to said filaments as they are advanced into said apertures.

3,857,156

METHOD OF MAKING TETRAFLUOROETHYLENE SEALING ELEMENTS WITH HYDRODYNAMIC ACTION

William E. Clark, Chelsea, Calif., assignor to Federal-Mongul Corporation, Southfield, Mich.

Filed Dec. 19, 1973, Ser. No. 426,373
Int. Cl. B23p *17/00*
U.S. Cl. 29—417 **6 Claims**



1. A method for manufacturing an oil seal element from polytetrafluoroethylene and the like from a tubular billet of polytetrafluoroethylene or the like having an outer cylindrical surface of a desired diameter, a concentric inner cylindrical surface of a desired diameter, and an annular body between said cylindrical surfaces, comprising the steps of:

facing-off one end wall perpendicular to said cylindrical surface,

machining the faced end wall to provide a spiral groove leading from the intersection of said wall with said inner cylindrical surface and extending for a desired width,

slicing said billet at a desired thin distance from said faced and machined end wall to provide a washer having a spiral groove on one surface and to provide a newly faced end wall which is therafter machined with a spiral groove prior to another slicing, and

proceeding thusly through said billet to provide a plurality of said washers, each with a spiral groove on one surface.

3,857,157

METHOD OF PRODUCING HOT PRESSED COMPONENTS

Dexter William Smith, and Roland John Lumby, both of Birmingham, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed May 4, 1973, Ser. No. 357,278
Claims priority, application Great Britain, May 16, 1972, 22811/72
Int. Cl. B22f *3/24*
U.S. Cl. 29—420.5 **5 Claims**

1. A method of producing a hot pressed component, comprising the steps of:

i. forming a first, hot pressing die part suitable for only a single hot pressing operation by;

a. mixing boron nitride powder with a refractory, non-sinterable powder other than boron nitride and an organic carrier liquid to produce a slurry,

b. causing the slurry to flow into the shape of said first die part, and

c. removing the organic carrier liquid from the slurry to produce said first die part in the form of a powder compact which is compressible during hot pressing and is of substantially uniform density,

ii. positioning said first die part together with a second, hot pressing die part within a die cavity and with material to be hot pressed being received between the die parts,

iii. applying pressure to the die parts at an elevated temperature to hot press the material into the required hot pressed component and simultaneously hot press said first die part, the ratio of the density of said first die part, after hot pressing, to the density of the first die part, prior to hot pressing, being substantially equal to the ratio of the density of the hot pressed component to the density of said material to be hot pressed, and

iv. separating the die parts from said hot pressed component.

3,857,158

METHOD AND APPARATUS FOR REMOVING CONDENSER TUBES FROM SURFACE CONDENSERS

Dennis W. Costello, 306 Kemerer Dr., McCabe Acres, Greensburg, Pa. 15601

Filed Dec. 19, 1972, Ser. No. 316,584
Int. Cl. B23p *19/02*
U.S. Cl. 29—427 **8 Claims**

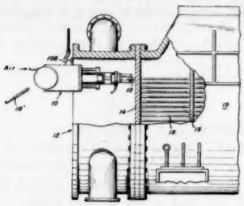
1. A method of removing a tube from a surface condenser comprising:

a. loosening said tube;

b. pulling said tube out of the surface condenser a sufficient distance to allow an external grasping apparatus to obtain a purchase on the tube;

c. grasping the external surface at the end of said tube with a pulling apparatus;

d. pulling said tube out of the condenser a predetermined distance;



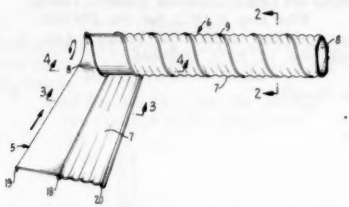
e. releasing said tube;
f. moving the grasping apparatus relative to the tube to obtain a new purchase on the tube; and
g. repeating steps c through f until the tube has been pulled completely free of the condenser.

3,857,159

PIPE FORMING METHOD

Paul Knight Davis, Alameda, Calif., assignor to Pacific Roller Die Co., Inc., Hayward, Calif.

Filed Sept. 27, 1973, Ser. No. 401,167
Int. Cl. B23p *19/00*
U.S. Cl. 29—429 **8 Claims**



1. A method for forming double wall helical seam pipe from a single elongated strip having parallel side edges, comprising:
a. forming first and second pipe seam elements respectively along the opposite said side edge portions of said strip;
b. forming a third pipe seam element longitudinally in said strip midway between said first and second seam elements;
c. curling said strip into helical convolutions about an axis extending at an oblique angle with respeect to the longitudinal axis of said strip such that the strip portion between said first and said third elements and the strip portion between said second and said third seam elements are curved into superposed relationship.

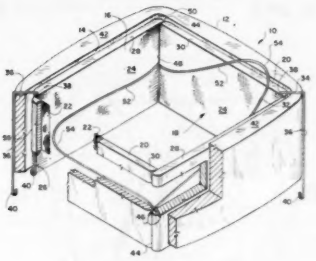
3,857,160

HOT TOP INSTALLATION METHOD

Ferd A. Mueller, Canon City, Colo., assignor to Colorado Refractories Corporation, Canon City, Colo.

Filed Aug. 20, 1973, Ser. No. 390,081
Int. Cl. B21d *39/02*
U.S. Cl. 29—463 **3 Claims**

1. The method of installing a two-piece hot top of the type consisting of a pair of identical foldable refractory panel subassemblies within the generally rectangular throat in the hollow neck of an ingot mould which comprises the steps of: placing the foldable joints between panels of the respective panel subassemblies in opposite corners of the mould throat, suspending the subassemblies thus positioned from the rim of the neck bordering the mouth into the throat thereof, unfolding the panels of each panel subassembly to the point where the free edges of one engage those of the other to define butt joints therebetween, inserting the ends of a pair of spring wire spreaders through the butt joints thus formed and into those corners of the mould throat remote from the ones occupied by the foldable joints, independently bending those portions of each spreader adjacent its midsection inwardly so as to locate the latter sections diagonally opposite one another in position



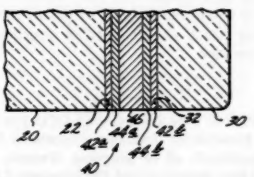
to enter the foldable joints, and releasing the spreaders into positions such that the midsections thereof engage the inside panel faces at spaced points on opposite sides of the foldable joint while those portions adjacent the spreader ends pivot around the free edges of their respective panel subassemblies and cooperate with said midsections thereof to bias the panels outward into tight face-to-face contact with the mould walls therebehind.

3,857,161

METHOD OF MAKING A DUCTILE HERMETIC INDIUM SEAL

Thomas B. Hutchins, IV, 310 N.W. Brynwood Ln., Portland, Oreg. 97229

Filed Feb. 9, 1973, Ser. No. 331,038
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.7 **12 Claims**



7. A method for forming a ductile hermetic seal between a pair of surfaces, one comprising a vitreous material, and the other a surface wettable by molten indium, said method comprising the subsequential steps of

adhering to said one surface a coating of a platinum group metal,

adhering to said coating of said metal a coating of gold,

placing the thus-coated surface and said other surface together, and heating them in a reducing atmosphere to a temperature at least equal to the melting point of indium, spreading molten indium along an interface between the heated surfaces, and

reducing said temperature below said melting point whereby said indium solidifies, bonding the surfaces together and forming a ductile hermetic seal between them.

3,857,162
METHOD FOR THE PRODUCTION AND/OR TESTING OF WELDED HELICAL SEAM PIPE

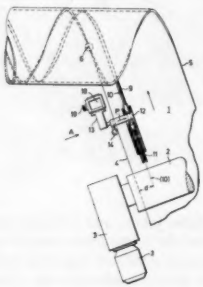
Ralf Hoffmann, Dortmund-Solde, and Werner Wennemann, Dortmund-Kirchhorde, both of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Germany

Filed Mar. 14, 1973, Ser. No. 341,281

Claims priority, application Germany, Mar. 15, 1972, 2212382

Int. Cl. B23k *31/02*

U.S. Cl. 29—477.3 **4 Claims**



1. In a method of producing welded helical seam pipe from steel sheet wound into pipe formation, wherein prior to the welding of the wound sheet, an optically scannable reference line is applied to the steel sheet, which reference line extends parallel to and spaced from one of the edges of the sheet, and wherein the welding is effected by applying a first welding seam with a first welding head located within the pipe, and a second welding seam with a second welding head located outside the pipe, the improvement which comprises applying said optically scannable reference line to that face of the sheet which forms the inner surface of the welded pipe, optically scanning said reference line to obtain scanning information and controlling the welding movements of both said first and second welding heads in dependence on said scanning information, said wound sheet, after application of said reference line, being first tack-welded and then transferred to a finish welding station where the welding by means of said first and second welding heads is performed in dependence on said scanning information.

3,857,163
FORMING PRESSURE-WELDED JOINTS

John Alfred Hirschfield; Johannes Franciscus Lablans, and William Shankland, all of Kingston, Ontario, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

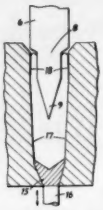
Filed Dec. 13, 1972, Ser. No. 314,666

Claims priority, application Great Britain, Dec. 14, 1971, 58111/71

Int. Cl. B23k *31/02*

U.S. Cl. 29—482 **11 Claims**

1. A method of forming a welded joint between aluminium and steel without formation of significant quantities of intermetallic phases at the steel-aluminium interface which comprises driving a straight-edged steel wedge member into one end of a heated aluminium member located in a restraining die having side walls and a closed end remote from said one end of said aluminium member, the die and aluminium member being so mutually shaped that a clearance is provided initially between the aluminium and the side wall of the die adjacent said one end of the aluminium member to avoid the introduction of extraneous material from the side surface of the aluminium to the aluminium/steel interface, said wedge member having bare steel surfaces for direct contact with aluminium and further having a wedge-shaped edge portion and a shank portion, while maintaining the shank portion spaced from the



die walls, and extruding aluminium of said aluminium member into the space between the die walls and the shank during the driving of the wedge member under conditions arranged to develop at the steel-aluminium interface, a pressure sufficient to cause pressure welding of aluminium to steel without fusion of the aluminium.

3,857,164
METHOD FOR BRAZING RADIATORS MADE OF ALUMINUM

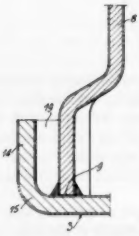
Andre Chartet, Hauts de Seine, France, assignor to Societe Anonyme des Ueines Chausson, Asnieres, France

Filed Aug. 4, 1972, Ser. No. 278,085

Claims priority, application France, Aug. 6, 1971, 71.28868; Mar. 17, 1972, 72.09446

Int. Cl. B23k *1/20, 31/02*

U.S. Cl. 29—483 **6 Claims**



1. A method for brazing radiators made of aluminum of which the parts are at least partly covered with a brazing film, comprising the steps of shaping the parts, providing said parts with contacting portions along the brazed junction to be made, said contacting portions comprising a substantially flat surface of one of the parts and a substantially linear portion of the other part, assembling the parts in relationship for which the contacting portions are substantially T-assembled in cross-section thus delimiting between said parts a continuous capillary passageway the width of which corresponds substantially to said linear portion, depositing a liquid flux only on the outside of the assembled parts whereby said flux is drawn through said continuous capillary passageway and in the vicinity thereof and wets only through capillary action a very small inner portion of said parts in the vicinity of said capillary passageway within the assembled parts, dehydrating the flux, heating the radiator to the melting temperature of the flux, whereby said parts are fluxed only on said portions wet by said flux, and comprising the further step of delimiting on said parts in the immediate vicinity of the brazed connections to be made narrow canals defined by the outer walls of the parts,

whereby capillary housings are delimited to draw up and retain both the flux and the brazing material to be supplied to said capillary passageway, continuing heating the parts to melting temperature of the brazing film whereby the resulting liquid brazing material is drawn up only in the capillary passageways and portions wet with the flux.

3,857,165

WELDING ALUMINUM

William D. Vernam, New Kensington, and William A. Anderson, Pittsburgh, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 4, 1973, Ser. No. 357,199
Int. Cl. B23k *35/24*
U.S. Cl. 29—504 **24 Claims**

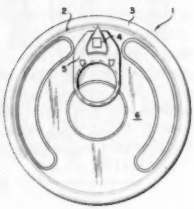
1. A method of fusion welding structural members of an aluminum alloy parent metal consisting essentially of 0.8 to 7% copper, not more than 3% magnesium, 1.2% silicon, 1.2% manganese, 0.7% iron, 0.15% titanium, 0.15% vanadium, 0.25% zirconium, 0.25% zinc, 0.1% chromium, 0.02% cadmium, 0.05% others each, and 0.15% others total as impurities, balance aluminum, comprising forming a welded joint between said members with a filler metal consisting essentially of 5 to 7% copper, 1 to 2.5% magnesium, and 0.1 to 3.3% silicon, not more than 0.25% zirconium, 0.15% titanium, 0.8% manganese, 0.7% iron, 0.02% vanadium, 0.25% zinc, 0.1% chromium, 0.05% others each, and 0.15% others total as impurities, balance aluminum.

3,857,166

METHOD OF RIVETING A PULL TAB TO A CAN TOP

Christian Gaillard, La Fleche, France, assignor to Cebal GP, Paris, France

Filed Oct. 12, 1972, Ser. No. 296,964
Int. Cl. B21d *39/00*; **B23p** *11/00*
U.S. Cl. 29—509 **3 Claims**



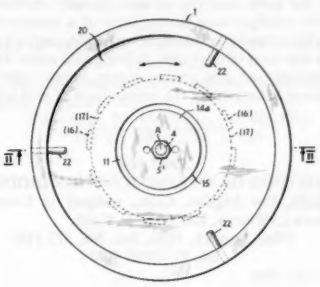
1. The method of nonrotatably securing a prehension member to the removable portion of a thin walled metallic container opening comprising the steps of forming a spherical excrescence in the removable portion without substantially reducing the thickness thereof, reducing said excrescence in at least one further step to a substantially cylindrical shape, shaping without substantial thinning the cylindrical walls of said excrescence to define a substantially square walled rivet configuration, positioning a complementary opening in said prehension member over said square walled excrescence and deforming the portion of said excrescence extending through said prehension member to nonrotatably stake said prehension member to said removable portion of said container by said deformation of said rivet.

3,857,167

METHOD FOR CENTRIFUGALLY CASTING AN ANNULUS OF METAL ABOUT A HUB

Willi Schmitz, Andernach/Rhine, Germany, assignor to H. Beyer KG Mittelrheinische Metallgiessere, Andernach, Germany

Division of Ser. No. 254,365, May 18, 1972, Pat. No. 3,823,764. This application Nov. 6, 1973, Ser. No. 413,226
Int. Cl. B22d *31/00*
U.S. Cl. 29—527.6 **9 Claims**



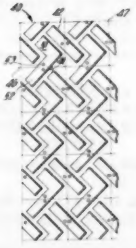
1. A method of making a gear and the like, comprising the steps of providing a hub member; rotating said hub member about a vertical axis and centrifugally casting about its periphery an annulus of metal; said casting resulting in the formation of metallic deadheads at opposite axial ends of said hub member, and the exertion by said deadheads of pressure, which causes the liquid metal to flow into intimate contact with said hub member during said casting and the formation of said annulus; wherein the inner radial dimensions of said hub member are much smaller than the radius of said periphery of the hub member.

3,857,168

SQUARE CYLINDRICAL PACKAGED SEMICONDUCTOR DEVICE

Shinzo Anazawa, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Division of Ser. No. 299,855, Oct. 24, 1972, Pat. No. 3,801,881. This application Oct. 9, 1973, Ser. No. 404,730
Claims priority, application Japan, Oct. 30, 1971, 46-85967
Int. Cl. B01j *17/00*
U.S. Cl. 29—583 **5 Claims**



1. A method of making a packaged semiconductor device including the steps of metallizing a principal surface of a sheet-like insulator member to provide a plurality of conductors electrically insulated from each other on said one principal surface, providing conductive means through said member to connect said metallization to an opposite surface of said member, thereafter hermetically sealing spacer means onto said one principal surface to define a plurality of areas on said

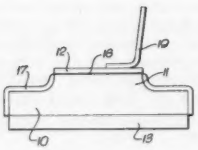
one principal surface with a lesser plurality of portions of said conductors appearing in each of said areas, thereafter separating said metallized member into pieces to provide individual assemblies each having one of said areas and placing a semiconductor element on a first predetermined one of said conductor portions with the electrodes of said semiconductor element being electrically connected to said conductor portions, and thereafter attaching a top member to the free end of said spacer means of each of said assemblies to provide a packaged semiconductor device, said spacer means being a sheet-like member made, prior to said hermetically sealing step, of the same material as said insulator member into a lattice-like configuration having laths of a substantially constant width crossing substantially at right angles to provide columns and rows of apertures defining said areas, said metallized member and said spacer means being separated into pieces along substantially the center lines of said laths.

3,857,169

METHOD OF MAKING JUNCTION DIODES

Yuji Okuto, Los Angeles, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed June 21, 1973, Ser. No. 372,310
Int. Cl. H01l *7/48*
U.S. Cl. 29—590 **5 Claims**



1. A method of making a diode with a Shottky barrier rectifying contact, including the steps of:

depositing a metal on a portion of a surface of a semiconductor; and

growing a semiconductor oxide layer on the semiconductor surface about said portion and simultaneously forming an alloy of the metal and semiconductor at said portion producing the rectifying contact at the metal and semiconductor alloy junction.

3,857,170

METHOD AND APPARATUS FOR POSITIONING COMPONENTS OF DYNAMOELECTRIC MACHINE FOR ASSEMBLY

Jesse A. Stoner, Dekalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

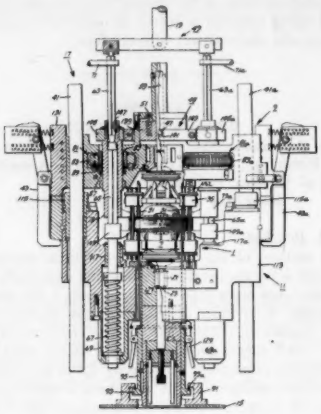
Filed Sept. 14, 1973, Ser. No. 397,297
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **76 Claims**

1. A method of positioning components of a dynamoelectric machine for assembly and compensating for an out-of-square stator comprising the steps of:

a. supporting a rotatable assembly of the dynamoelectric machine in at least one end frame thereof and having the stator disposed about the rotatable assembly;

b. displacing a pair of means for clamping the stator into engagement with a high portion and a low portion on an end of the stator; and

c. moving the stator and the clamping means conjointly generally coaxially with the axis of the rotatable assembly



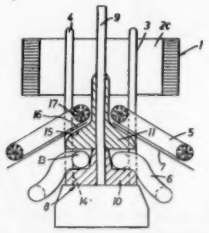
toward a position for assembly without skewing the stator with respect to the axis.

3,857,171

METHOD OF DRAWING IN THE STATOR WINDING OF AN ELECTRIC MOTOR

Egon Lund, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 12, 1973, Ser. No. 415,120
Claims priority, application Germany, Nov. 11, 1972, 2255345
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **6 Claims**



1. A method of drawing in the stator winding into stator grooves of an electric motor in which winding strands from two different coils are superposed in said grooves and their end windings are separated by insulating foils of insulating inserts which foils are connected in pairs by means of insulating strips of said insulating inserts which are likewise fitted in said grooves, the coils being arranged on pins which extend between said grooves at the inner periphery of the stator, and thereafter the head portions of the coils disposed within the inner periphery are moved through the stator by means of axial forces applied at an end face, and the adjacent coil parts are at the same time held at a diameter which is at least equal to the inside diameter of the stator, wherein all the coils, with the insulating inserts interposed, are arranged in at least two layers on the pins in such manner that on the one hand winding strands in the same one of said grooves and from different coils and, on the other hand, insulating strips and in each case at least one winding strand are superposed, and in that the

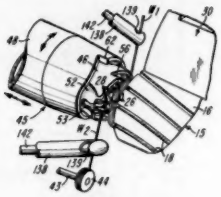
axial forces are applied not only at an end face to the head ends of the coils of the first layer, but also on the end winding insulating foils disposed within the inner periphery of the stator.

3,857,172

APPARATUS AND METHOD FOR WINDING ARMATURES

Robert D. George, Waynesville; Alvin C. Banner, Kettering, and George W. Morrison, Dayton, all of Ohio, assignors to Mechaneer, Inc., Dayton, Ohio

Filed Mar. 27, 1972, Ser. No. 238,246
Int. Cl. H01r 43/00
U.S. Cl. 29—597 15 Claims



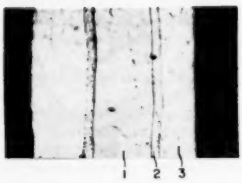
1. In apparatus for winding coils of wire on an armature core mounted on a shaft supporting a commutator having tangs to which armature wire leads are attached to the commutator, the combination of an inner sleeve surrounding the commutator to shield the tangs, an outer sleeve surrounding said inner sleeve, at least one wire shearing surface on said inner sleeve, at least one wire shearing surface on said outer sleeve, said sleeves being rotatable between a first position where a wire lead extends from a commutator tang between said first and second shearing surfaces and a second position to effect shearing of the wire lead by said first and second shearing surfaces, and power operated means for producing relative rotative movement of said sleeves between said first and second positions.

3,857,173

METHOD OF PRODUCING A COMPOSITE SUPERCONDUCTOR

Kyoji Tachikawa, and Yuji Yoshida, both of Tokyo, Japan, assignors to The Director of National Research Institute for Metals, Tomoyoshi, Kawada, Tokyo, Japan

Continuation of Ser. No. 112,748, Feb. 4, 1971, abandoned. This application June 22, 1973, Ser. No. 372,693
Claims priority, application Japan, Feb. 9, 1970, 45-10730
Int. Cl. H01v 11/14
U.S. Cl. 29—599 7 Claims



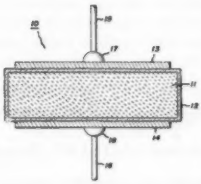
1. A method of producing a superconductor element having an outer protective layer, wherein said element includes a superconductor selected from the group consisting of V_3Ga and V_3Si superconductors, which comprises the steps of: providing an elongated composite member having an outer sheath comprising a material selected from a first group of materials consisting of copper, silver and a copper-silver alloy, each of them containing 0.1 to 30 atomic percent gallium or 0.1 to 10 atomic percent silicon, and having a core material encompassed by said outer sheath and selected from a second group of materials consisting of a vanadium alloy containing 0.1 to 10 atomic percent titanium, zirconium or hafnium, and subjecting said composite member to a heat treatment to provide said superconductor of V_3Ga or V_3Si having a said protective layer comprising said material selected from said first group.

3,857,174

METHOD OF MAKING VARISTOR WITH PASSIVATING COATING

John E. May, Skaneateles, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,334
Int. Cl. H01c 1/14, 17/00
U.S. Cl. 29—621 7 Claims



1. A method for manufacturing a varistor comprising the steps of:

providing a body portion consisting essentially of a metal oxide and a relatively small portion of a reaction product obtained by melting together a plurality of preselected additives;

applying a passivating coating to said body portion, said coating comprising a small quantity of the reaction product; and

heating said body portion with said coating thereon.

3,857,175

METHOD OF MANUFACTURING REED SWITCHES WITH OXIDIZED RHODIUM CONTACTS

Toshiki Yokokawa and Chihiro Kawakita, both of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

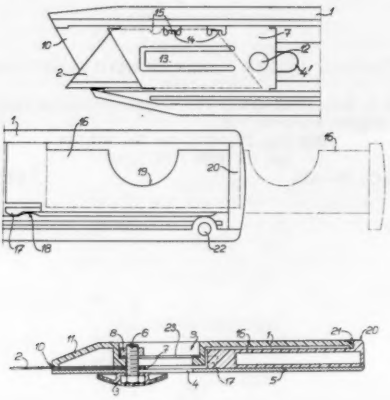
Division of Ser. No. 327,098, Jan. 26, 1973, Pat. No. 3,813,508. This application Dec. 5, 1973, Ser. No. 421,788
Int. Cl. H01h 11/00
U.S. Cl. 29—622 3 Claims

1. A method of manufacturing a reed switch comprising the steps of forming rhodium contacts on leads, oxidizing said rhodium contact and sealing said leads with said oxidized rhodium contacts in a sealed envelope.

3,857,176
KNIFE WITH A RETRACTABLE BLADE

Michel Quenot, Besancon, France, assignor to Stanley-Mabo, Besancon, France

Filed Dec. 10, 1973, Ser. No. 423,084
Claims priority, application France, Dec. 11, 1972, 72.44004
Int. Cl. B26b *1/08*
U.S. Cl. 30—162 **5 Claims**



1. A knife handle comprising a hollow elongate shell, a rigid elongate side plate, a blade-carrying carriage movably mounted between the shell and side plate, and means for gripping the carriage between the shell and side plate in selected positions along the handle, said carriage gripping means including: means defining registering elongate slots along the side plate and the shell, the slot in the shell communicating with an enlarged elongate rail-forming channel towards the outer face of the shell, a screw having an enlarged head bearing against the side plate and a shank passing through said slots into said channel, a nut threadably engaged on said shank, the nut being held in said channel for sliding movement therealong but against rotation relative to the shell, and means defining an aperture in the carriage for receiving said screw, said enlarged head being manually rotatable between a first position in which it can be moved bodily with the screw, nut and carriage by sliding of said shank along said slots, and a second position in which it is fixed with the carriage firmly gripped between the shell and plate in any given position of said shank along said slots, said carriage including blade engaging means for movement of a blade with the carriage and automatic blade releasing means operably responsive upon movement of said head toward and beyond said first position to release the blade from said blade engaging means without relative angular movement of said shell and said side plate.

3,857,177
DEHIDING APPARATUS

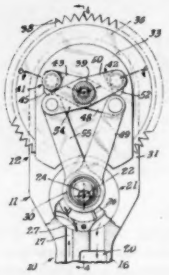
Ralph Karubian, 2001 W. Gage Ave., Los Angeles, Calif. 90047, and Elias D. Quintana, Huntington Beach, Calif., assignors to said Karubian, by said Quintana

Filed Apr. 13, 1973, Ser. No. 350,991
Int. Cl. B26b *19/12*
U.S. Cl. 30—216 **4 Claims**

1. Dehiding apparatus in the form of a hand tool comprising, in combination:

an elongated handle section having two longitudinal, side-by-side passages, one for passing inlet compressed air to the forward end of said section and the other for passing exhaust air received by said forward end, to and out of the rearward end of the handle, said handle being provided with a normally closed valve across the passage passing the inlet air and having a control lever operable by the hand that grips the handle section for opening said inlet passage to flow of compressed air forwardly, the exhaust air passage being constantly open,

an intermediate section extending from the forward end of the handle section provided with a transversely disposed air motor connected to receive compressed air from the above-mentioned inlet passage and discharge exhaust air into the mentioned exhaust passage, said motor having a rotor disposed on an axis transverse to the longitudinal extent of the handle section and provided at one end with and eccentric cam having a rotational collar thereon,

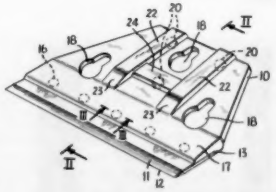


an elongated forwardly extending forward section having a transverse axle parallel to the axis of the air motor, a pair of cutter discs mounted to rotate on said axle, means to operatively connect said rotational collar and said discs comprising lever means mounted for oscillating movement on said axle and having arms connected to said discs outwardly of said axle, and connecting rod means engaged at one end with the above-mentioned rotational collar, and at the other end with the mentioned lever means, whereby rotational movement of the rotor of the air motor produces opposite oscillatory movement of the shearing discs.

3,857,178
DERMATONE CUTTING BLADE ASSEMBLY

William Henry Stevens, II, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed May 23, 1973, Ser. No. 362,956
Int. Cl. B25g *3/36*
U.S. Cl. 30—344 **4 Claims**

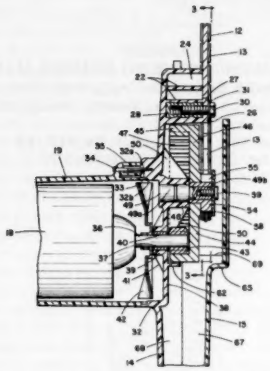


1. A dermatone cutting blade assembly comprising a support member of moldable plastic and a blade element of metal having a forward cutting edge permanently secured to a forward edge part of said member, said member having raised ribs on its upper surface extending rearwardly transverse to said cutting edge, said ribs having ramps facing toward the cutting edge inclined upwardly and rearwardly to guide the skin.

3,857,179
CHAIN SAW

Eugene J. Haupt, Flossmoor, and Robert M. Shymkus, Country Club Hills, both of Ill., assignors to Desa Industries, Inc., Cockeysville, Md.

Filed Apr. 22, 1974, Ser. No. 462,975
Int. Cl. B27b *17/08*
U.S. Cl. 30—381 **11 Claims**



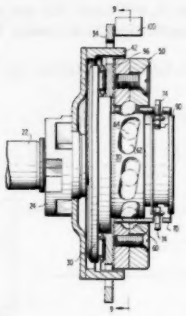
1. In a chain saw having a housing, a guide bar mounted on the housing, a saw chain extending around the guide bar and slidably supported thereby, and power means for driving the chain around the guide bar, the improved drive means for connecting the power means and the chain comprising a generally cup-shaped first gear rotatably mounted in the housing, the first gear having a cylindrical side wall and an end wall having inner and outer surfaces, the side wall of the first gear having gear teeth on the inside surface thereof, a sprocket mounted on the outer surface of the end wall of the first gear and drivingly engaging the chain, a drive shaft connected to the power means for rotation thereby, a second gear mounted on the drive shaft and meshing with the gear teeth of the first gear whereby rotation of the drive shaft rotates the sprocket and drives the chain around the guide bar.

3,857,180
CHAIN SAW INERTIA CLUTCH ASSEMBLY

James L. Dooley, Santa Monica, Calif., assignor to McCulloch Corporation, Los Angeles

Filed Mar. 22, 1973, Ser. No. 343,978
Int. Cl. B27b *17/10*; **F16d** *43/24*
U.S. Cl. 30—383 **41 Claims**

1. A chain saw comprising:
a housing including manual gripping means;
an internal combustion engine carried by said housing;
a guide bar connected to and projecting from said housing;
a drive wheel rotatably mounted adjacent an inner end of said guide bar;
an endless cutter chain entrained around said bar and said drive wheel;
a drive train for drivingly interconnecting the engine to the drive wheel to drive said cutter chain;
said drive train including engine-driven rotary means;
inertia clutch means operably connected to the drive train and comprising:
inertia means drivingly coupled to said rotary means and being axially displaceable relative to said rotary means into a clutching posture in response to acceleration of said rotary means relative to said inertia means, and into a declutching posture in response to deceleration of said rotary means relative to said inertia means; and
restraining means operably connected to said inertia means and
being responsive to operation of said engine below a predetermined speed to restrain said inertia means

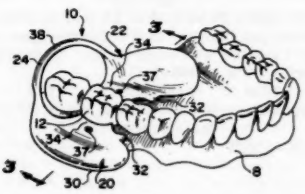


from axial movement into said clutching posture, and being responsive to operation of said engine above the predetermined speed to permit axial movement of said inertia means into said clutching posture.

3,857,181
DENTAL SHIELD

Bernard B. Rappaport, 179 E. Lake Shore Dr., Chicago, Ill. 60611

Filed July 26, 1973, Ser. No. 382,822
Int. Cl. A61c *5/12*
U.S. Cl. 32—36 **8 Claims**

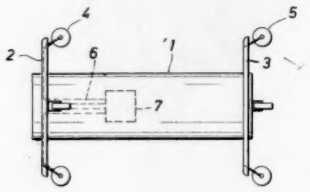


1. A unitary one-piece dental shield designed for removable attachment to a selected molar or bicuspid within the oral cavity of a human being, said shield being formed of resilient material and comprising a pair of forwardly disposed, spaced apart, shallow, dished, wing-like portions of relatively small sheet-like thickness and an interconnecting rearwardly disposed, upwardly arched and rearwardly and upwardly inclined bight portion, said wing-like portions being substantially identical in size and shape but being substantial mirror images of each other, the opposite ends of said bight portion being connected to the rear edges of said wing-like portions, each wing-like portion having a generally horizontal bottom wall from which there extends outwardly and upwardly an inclined side wall portion having an outer upper edge which is curved through and of involute contour with progressively increasing radii in a rearward direction the horizontal bottom walls of said wing-like portion lying substantially in the same horizontal plane and presenting opposed edges adapted to straddle the tooth to which the shield is attached and, by a clamping action incident to flexion of the bight portion, fixedly attach the dental shield to such tooth, the over-all height of said bight portion being not appreciably greater than the over-all height of said wing-like portions.

3,857,182
APPARATUS FOR INSPECTION PURPOSES, INTENDED TO BE MOVED THROUGH A PIPELINE

Arnoldus J. Van Riemsdijk, and Waldo van den Berg, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 6, 1973, Ser. No. 394,903
Claims priority, application Netherlands, Oct. 30, 1972, 7214646
Int. Cl. G01b *3/12;* **G01m** *3/28*
U.S. Cl. 33—141 G **5 Claims**



1. In a pipeline leak detecting instrument of the type wherein an instrument is transported through the pipeline by fluid flow and the distance the pig travels is determined by a measuring wheel that contacts the wall of the pipeline and produces an electrical signal related to the rotation of the wheel, the improvement comprising:

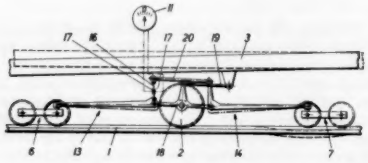
at least two measuring wheels, said wheels being disposed on opposite sides of said pig; and

an auctioneering circuit, said circuit being coupled to both of said measuring wheels to select for rocording on a single recorder the signal from the measuring wheel producing the largest signal.

3,857,183
MOBILE TRACK SURVEY APPARATUS

Erna Plasser; Josef Theurer, both of Johannesgasse 3, Vienna, Austria (A-1010), and Franz Eglseer, Kleinreith Nr. 32, Ohlsdorf, Austria (A-4694)

Filed July 9, 1973, Ser. No. 377,453
Claims priority, application Austria, Aug. 3, 1972, 6692/72
Int. Cl. B61k *9/00*
U.S. Cl. 33—174 R **9 Claims**



1. A mobile apparatus for surveying the vertical position or warpage of the rails of a track whereon the apparatus is adapted to run, comprising

1. a frame,

2. undercarriages supporting the frame for movement on the track,

3. three rail sensing means spaced apart in the direction of track elongation and being vertically movable with respect of the frame for surveying at least one of the track rails,

a. at least the intermediate one of the sensing means being constituted by one of the undercarriages,

4. connecting elements extending substantially in the direction of track elongation and linking each of the two other sensing means to the intermediate sensing means constituted by the one undercarriage,

5. universal joint means connecting the connecting elements to the rail sensing means,

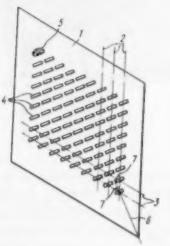
6. transducer means converting any relative movement of the connected rail sensing means in respect of each other into an electrical signal proportional to the relative movement, and

7. recording means connected to the transducer means for indicating the error signal.

3,857,184
MASK FOR MANUFACTURING MEMORY MATRICES

Jury Alexandrovich Burkin, Tsvetnoi proezd 29, kv. 24, and Jury Emelyanovich Seleznev, Vesenny proezd, 4a, kv. 16, both of Novosibirsk, U.S.S.R.

Filed Nov. 12, 1973, Ser. No. 415,165
Int. Cl. G06f *13/06;* **G01b** *5/14*
U.S. Cl. 33—174 G **1 Claim**

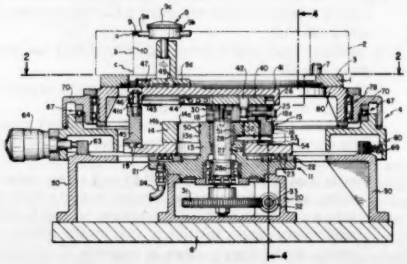


1. A mask for manufacturing memory matrices comprising a plate with slots for toroidal pole cores to be disposed therein; said slots being arranged upon said plate in parallel rows intersecting other parallel rows of slots at an angle other than a substantially 90° angle, the intersecting rows of slots making up a parallelogram; said slots at the vertices of the opposed acute angles of said parallelogram being arranged in such a way that the axis of each pole core disposed in said slots is positioned parallel to the direction of the bisectors of said acute angles.

3,857,185
APPARATUS FOR INSPECTING THE ACCURACY OF COMPLEXLY CONTOURED PRECISION SURFACES

Nils O. Hoglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation, Berkeley Heights, N.J.

Filed July 12, 1973, Ser. No. 378,438
Int. Cl. G01b *5/20*
U.S. Cl. 33—174 P **16 Claims**



1. Apparatus for inspecting a surface on a workpiece having

a contour of changing radius of curvature along said surface, said apparatus comprising:

a. a frame;

b. a workpiece supporting table mounted on the frame;

c. indicator means including a sensing member engaging along the surface of the workpiece to be inspected at a predetermined point lying along a predetermined line extending normal to the workpiece surface at said point, said sensing member being movable along said predetermined line in response to a positional variation in the surface of the workpiece to be inspected from a predetermined known contour; and

d. motion generating means mounting the indicator means for movement relative to the workpiece surface along a path corresponding to said predetermined contour, said generating means including:

2. a pair of cooperatively engaging members mounted for relative movement with respect to each other with the indicator means mounted on one of said members for movement along the path corresponding to said predetermined known contour as said members move relative to each other, neither of the contacting surfaces of said members alone having a contour corresponding to said predetermined contour,

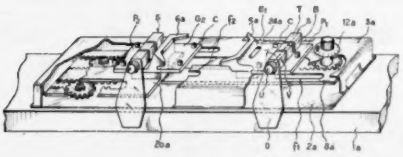
2. drive means for moving said members relative to each other, and 3. control means for continuously holding the sensing member for movement along said predetermined line during movement of the indicator means along said path to sense positional variations in the actual contour of the workpiece surface.

3,857,186

METHOD AND APPARATUS FOR DETERMINING THE LOCATION OF A SKI BINDING ON A SKI IN ACCORDANCE WITH THE SIZE OF A SKIER'S BOOT

Georges Pierre Joseph Salomon, 34 Avenue de Loverchy, Annecy, France

Filed Sept. 7, 1972, Ser. No. 287,072
Claims priority, application France, Sept. 8, 1971, 71.32449
Int. Cl. B43l *9/08;* **A63c** *9/00*
U.S. Cl. 33—192 **14 Claims**



1. A templet device for drilling a ski in order to locate along the longitudinal axis of the ski the positions for securing to the ski, front and rear parts of a safety ski binding relative to a reference position carried by the ski and corresponding to a standard ski boot, whatever the size of the ski boot, said device comprising:

a housing carrying clamping means for detachably securing said housing on said ski, said housing having a longitudinally elongated slot;

a front plate and a rear plate engaged in said slot of said housing and slidable therein, said front and rear plates having drill jigs;

a reverse drive mechanism located in said housing and connecting said front and rear plates for moving said plates along the longitudinal axis of the ski in opposite directions; and

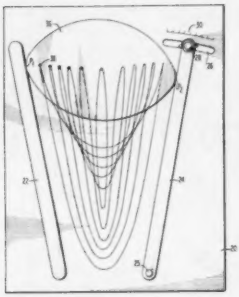
a single control means acting on said drive mechanism for moving said plates.

3,857,187

MECHANICAL MOTION DEVICE

Preben W. Jensen, 21 Southside Ave., Sommerville, N.J. 08876, and Ole R. Jensen, 126 Nottingham St., Montvale, N.J. 07645

Filed Oct. 8, 1970, Ser. No. 79,107
Int. Cl. B43l *11/00*
U.S. Cl. 33—27 L **6 Claims**



1. A mechanical motion device for generating a plurality of patterns comprising a movable member for generating a specific path of motion, a fixed guide means for guiding said movable member along a predetermined path, said movable member being maintained in sliding and rolling contact with said fixed guide means in at least two points at all times, said two points of contact shifting relative to said fixed guide means during movement of said movable member, said movable member and said fixed guide means each having noncircular surface between said two points of contact, means for supplying motor power to said movable member to cause said movable member to rotate about an instantaneous center and simultaneously move relative to said fixed guide means while maintaining said two-point sliding and rolling contact therewith at all times, wherein said movable member is constructed of an oval shape, said fixed guide means being two elongated straight members and further comprising a base plate for positioning said oval-shaped movable member and said elongated straight guide members thereon, said elongated straight guide members positioned on said base in angular relationship with each other with one end of each guide member intersecting at a common point, at least one opening in said oval-shaped movable member for generating a pattern on a surface of said base plate whereby said mechanical motion device may be used as a mechanical drawing apparatus by inserting a drawing instrument through said opening in said oval-shaped movable member and moving said drawing instrument.

3,857,188

CALCULATING INCLINOMETER FOR LEVELLING RECREATION VEHICLES

Jack B. Foster, Anaheim, and Jack F. Antes, Tustin, both of Calif., assignors to Super Seer Corporation, Evergreen, Colo.

Filed Feb. 13, 1974, Ser. No. 441,949
Int. Cl. G01c *9/28*
U.S. Cl. 33—388 **8 Claims**

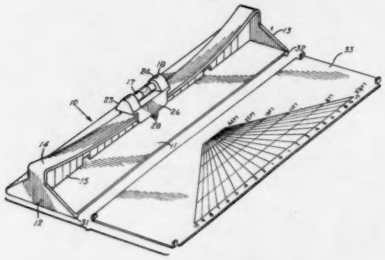
1. A calculating inclinometer for levelling recreation vehicles, such as pickup campers, trailers, mobile homes or the like, the levelling device comprising:

a. mounting means arranged to be positioned on said vehicle, said mounting means having a planar base member and an arcuate concave slide rail mounted in spaced relation above said base member;

b. slide means inclusive of bubble level indicator means arranged for slidable movement along said rail, said slide

means having depending pointer means disposed toward said flat base member, and

c. scale support means having indicia imprinted thereon comprising an elevational correction scale and a length scale, said support means being arranged to be slidably moved over said flat base member and below said indicator pointer means, said movement being perpendicular to said movement of said slide means and serving to position a portion of said length scale adjacent to said pointer in order to indicate the elevational correction for a selected length of said vehicle when said slide means is slidably moved along said rail so that the bubble level indicates a level position.



3,857,189

DEVICE FOR DRYING AND FIXING COPYING MATERIAL

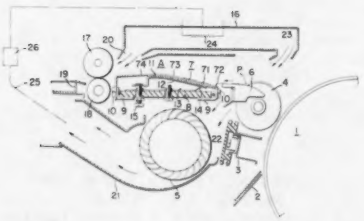
Hajime Katayama; Hiroshi Nitanda, and Koichi Miyamoto, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1973, Ser. No. 359,626

Claims priority, application Japan, May 19, 1972, 47-49719; July 5, 1972, 47-66648; July 5, 1972, 47-66649; June 5, 1972, 47-66294

Int. Cl. H05b *1/00*; F26b *3/18*

U.S. Cl. 34—95 **6 Claims**



1. A drying-fixing device for a copying material bearing a visualized image thereon after development, comprising a heat plate having a convex surface portion on its upper surface for improving the contacting pressure of the copying material moving on said upper surface of the heat plate, plate heater means disposed on the back side surface of said heat plate, adjustably mounted compressing means engageable with said plate heater means for bringing said plate heater means into uniform and intimate contact with the back side surface of said heat plate, and means for transmitting the copying material from the liquid developing means to tray means through said heat plate.

3,857,190

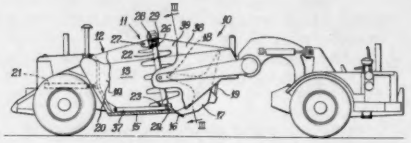
AUGER SCRAPER AND EJECTOR SYSTEM

James E. Gee, Washington, and Robert N. Stedman, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 1, 1973, Ser. No. 402,345

Int. Cl. E02f *3/62*

U.S. Cl. 37—8 **12 Claims**



1. A self-loading auger scraper comprising

a bowl having a pair of laterally spaced and vertically disposed sidewalls, a generally horizontally disposed floor connected between said sidewalls and a cutting edge secured to a forward end of said floor,

a generally vertically disposed ejector, extending between said sidewalls, normally positioned at a rearward end of said bowl,

actuating means for selectively moving said ejector from the rearward end towards an open, forward end of said bowl, an auger rotatably mounted in said bowl and having its upper end pivotally mounted thereon for swinging movements from a normal generally vertically disposed position, whereat a lower end of said auger is positioned adjacent to said cutting edge,

means for rotating said auger, and

linkage means pivotally interconnected between said ejector and said auger for automatically pivoting said auger to move the lower end thereof upwardly and forwardly towards the forward end of said bowl.

3,857,191

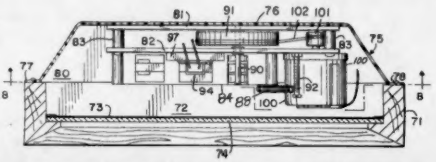
VISUAL-AUDIO DEVICE

George P. Sadorus, Decatur, Ill., assignor to Talkies U.S.A., Inc., Argenta, Ill.

Continuation-in-part of Ser. No. 113,564, Feb. 8, 1971, abandoned. This application Nov. 20, 1972, Ser. No. 307,837

Int. Cl. G09f *27/00*

U.S. Cl. 40—28.1 **2 Claims**



1. A personalized visual-audio recording of a particular person, comprising, a combination picture frame and housing having picture-receiving frame at the front and a rear wall, a picture of said person mounted facing frontward in said frame,

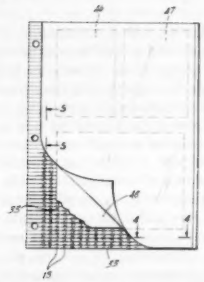
a mounting plate supported within said housing in spaced parallel relation with respect to said picture and rear wall, and sound producing means within said housing for reproducing utterings made by said person, comprising, a tape cartridge pivotally mounted flatwise on the front side of said mounting plate and containing a magnetic tape on which said utterings are recorded and a drive pulley adapted to be driven by frictional engagement with a fly wheel shaft, an electric motor mounted on the front side of said mounting plate and having a drive shaft projecting rearwardly therefrom, a pulley mounted on the rearward end of said motor drive shaft, a fly wheel mounted on a fly wheel shaft journaled between said rear wall and said mounting plate and having a portion frictionally engageable with said cartridge drive pulley, spring means biasing said cartridge toward said fly wheel shaft and said cartridge drive pulley into driving engagement with said shaft, a tape pickup head mounted on the front side of said mounting plate in signal pickup engagement with said tape, a speaker mounted on said rear wall to one side of said mounting plate, amplifier means mounted on said planar rear wall to one side of said mounting plate, a switch mounted on said housing, electrical conductor means interconnecting said switch, motor, pickup head and amplifier in circuit relationship with a current source.

3,857,192

DISPLAY DEVICE

Benjamin R. Mascolo, deceased, late of Brownsville, Tenn. (by Peter R. Mascolo, executor), assignor to Kleer-Vu Industries, Inc., New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,327
Int. Cl. G09f *1/10*
U.S. Cl. 40—158 R **8 Claims**



1. A composite sheet consisting essentially of a layer of board having two sides and at least one layer of flexible, transparent film, said film being releasably adhered to a first side of the board by a plurality of lines of pressure sensitive adhesive, said lines of adhesive being intersected by a plurality of grooves formed in the board and formed in the adhesive lines effective to create a plurality of operative adhesive points and a plurality of inoperative adhesive points, wherein the operative adhesive points are co-planar in a first plane and the inoperative adhesive points are co-planar within a second plane offset from the first plane, and wherein said inoperative adhesive points form a controlled and uniform spread of adhesive within said grooves extending beyond said operative adhesive points and said operative adhesive points form a controlled and uniform pattern.

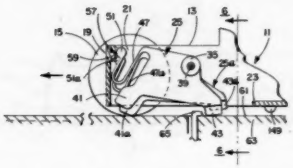
3,857,193

TOY VEHICLE AND TRACK SET

Adolph E. Goldgarb, 4614 Monarca Dr., Tarzana, Calif. 91356

Filed Nov. 30, 1972, Ser. No. 310,936
Int. Cl. A63h *11/10*
U.S. Cl. 46—202 **30 Claims**

1. A toy vehicle and track set comprising in combination:
a track having a main track portion and at least one intersecting branch track portion,
a fixed track guide means at the surface of said track for guiding a vehicle from the main track portion onto said branch track portion, and
a toy vehicle movable along said track and having movable vehicle guide means affixed thereto for being movable independent of said guide means on said track and prior



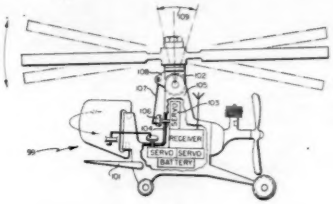
to operation of the vehicle to an inoperative position where it will not engage the fixed track guide means or to an operative position where it will engage the fixed track guide means, whereby said vehicle may be preprogrammed prior to operation to be guided onto said branch track portion.

3,857,194

MODEL AUTO-GIRO

Murray Guttman, 250 Johnochs Dr., Saddle Brook, N.J. 07662

Division of Ser. No. 264,269, June 20, 1972, Pat. No. 3,791,067. This application Nov. 29, 1973, Ser. No. 420,054
Int. Cl. A63h *27/12*
U.S. Cl. 46—244 B **4 Claims**



1. In a model rotary wing aircraft comprising:
a fuselage;
an operable engine means mounted on said fuselage along the longitudinal axis of the fuselage;
a propeller mounted on said engine means, said engine and propeller enabling the forward driving of said aircraft as an autogiro for take-off, landing or normal translational flight;
a general upwardly extending vertical rotor mast mounted on said fuselage and adapted to receive a rotor;
a free spinning rotor mounted on said mast having a plurality of rotor blades extending outwardly and generally horizontally from said mast; the rotor being disposed in the path of the air flow from the propeller;
landing gear mounted on said fuselage;
radio control means for providing aerodynamic control in various flight attitudes of said model rotary wing aircraft;

3,857,195

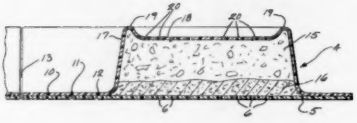
MULCH PACKET

Arthur L. Johnson, 1129 Erin St., Madison, Wis. 53715

Filed Oct. 1, 1973, Ser. No. 402,100
Int. Cl. A01g *13/10*
U.S. Cl. 47—32 **6 Claims**

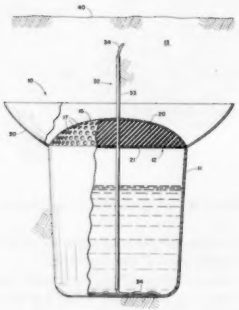
1. A mulch packet for application to soil surrounding a plant, comprising a base formed of a sheet of perforated plas-

tic, a moisture permeable cover formed of a moisture degradable material, the peripheral edge portion of said cover being attached to the peripheral edge portion of the base and the central portion of the cover being attached flatwise to the central portion of the base, the portion of the cover disposed



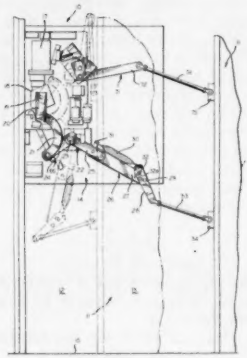
between the peripheral edge portion and the central portion being spaced above the base to provide an annular compartment between the base and the cover, a quantity of mulch located within said annular compartment, and a plurality of concentric knock-out rings in said central portions, said packet having a slit extending from the innermost of said rings to the outer periphery of the packet.

3,857,196
MOISTURE SAVING APPARATUS
Carl M. Alkire, Rt. 1, Rose, Okla. 74364
Filed Aug. 15, 1973, Ser. No. 388,613
Int. Cl. A01g *25/00*
U.S. Cl. 47—48.5 **3 Claims**



1. A unitary moisture saving apparatus adapted to be entirely buried in the ground for catching and saving moisture comprising, a moisture receiving container having an upwardly disposed opening, a top covering the opening having a plurality of openings to permit water to flow therethrough into said container, a porous isolation member interposed between said top and a perforate support means therebeneath, whereby said top, isolation member, and support means prevent the ground materials from falling into said container, an upwardly extending saucer surrounding and extending outwardly from said top to catch water and conduct it into said container, and wick means extending from a location outside the container in the ground into said container to conduct the water therein to a point remote from the container.

3,857,197
DOOR OPERATOR WITH DOOR PANEL POSITION SENSING AND LOCKING DEVICE
Redreddy Sukumar Reddy, Chicago; Carl W. Roth, Arlington Hts.; Richard A. Rago, Elmhurst, and Kristupas Daugirdas, Wilmette, all of Ill., assignors to Vapor Corporation, Chicago, Ill.
Filed Nov. 9, 1972, Ser. No. 304,907
Int. Cl. 105 *341;* **E05b** *47/00;* **E05f** *15/14*
U.S. Cl. 49—13 **16 Claims**



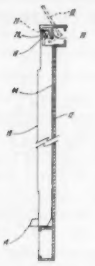
1. In a vehicle having a door opening in a side wall with inner and outer panels and a slidable door selectively movable between open and closed positions relative to the door opening, a door operator for driving said door between open and closed positions relative to said door opening, said door operator being mounted above the floor in the side wall between the inner and outer panels thereof and adjacent to the door opening, said door operator including an upstanding mounting plate, a reversible motor mounted on said plate with its axis of rotation extending substantially parallel thereto, a gear box mounted on the motor and in driving relation therewith, said gear box having an output shaft extending normal to the axis of the motor and substantially transverse the side wall, primary driving linkage means connecting said output shaft and door to drive same between open and closed positions including lever means extending from said output shaft, said lever means moving to overcenter position relative to the output shaft when the door is in closed position to lock the door against movement, a primary linkage extension arm having one end pivotally mounted to the mounting plate and pivotally connected to said lever means, a primary linkage connecting rod pivotally connected to the other end of the primary linkage extension arm and to the trailing edge of the door, means on the mounting plate coacting with the lever means to monitor the door position, and secondary linkage means connected between the mounting plate and door and driven by said door, said secondary linkage means including a secondary linkage extension arm pivotally mounted at one end to the mounting plate, a secondary linkage connecting rod pivotally connected to the other end of the secondary linkage extension arm and to the trailing edge of the door, means on the mounting plate coacting with the secondary linkage extension arm for monitoring the door position, said door position monitor means of the primary and secondary linkage means including switches having contacts in said circuit which open the circuit when the door is in open position and close the circuit as the door reaches closed position, and said contacts of said switches being connected in series, whereby both linkage means must monitor the door closed position before the traction interlock circuit is closed.

3,857,198

REMOVABLE DOOR FOR INSTRUMENT CASING

Melvin J. Post, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,138
Int. Cl. E05f 1/10
U.S. Cl. 49—386 3 Claims



1. In combination with a planar shaped cover and a housing having a planar side for receiving the cover the improvement comprising:

a pair of pins on said housing aligned along a common axis defining an axis of rotation for the cover

a pair of open sockets mounted on said cover to mate with said pins when the cover is positioned on said housing;

a leaf spring mounted, at the central portion thereof, to said cover to have its free ends extend across the open portion of the sockets and beyond said sockets, with the flat portion of the springs facing said socket,

a cam positioned on each of said pins for engaging opposite ends of said leaf spring so that when said cover is being positioned on said housing said cams urge said leaf spring away from said socket to allow the insertion of the pins into said sockets and thereafter maintain the pins in the sockets, wherein one surface of each of said cams and said axis of rotation define triangles having unequal sides, the longest side thereof defining a balanced rotational position of said cover so that when said cover is rotated from a closed position parallel to thee plane of the housing to less than the angle defined by the balanced position the cover is urged by said cams and leaf spring to the closed position and when said cover is rotated beyond the balanced position the cam and resilient means urge the cover to an open position.

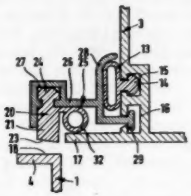
3,857,199

SEAL FOR A SLIDING DOOR, A SLIDING WINDOW OR THE LIKE

Werner Frach, Friedenstr. 16, and Bernhard Janke, Humboldtstr. 4, both of 8580 Bayreuth, Germany

Filed Nov. 15, 1972, Ser. No. 306,590
Claims priority, application Germany, Nov. 22, 1971, 2157832
Int. Cl. E06b 7/16
U.S. Cl. 49—477 12 Claims

1. A mechanism for a sliding door, window and the like, comprising: a stationary frame; a profiled elastic sealing strip and a circumferential pressure hose inflatable by a pressure fluid; a pressure transmission bar mounted by way of a pivot, arranged at least partly between and contacting both said hose and said strip; said bar having a surface which is substantially normal to the plane of said frame and is subjected to the action of said hose, said bar pressing said strip against a counter-surface associated with said strip; at least one sash slidable in said frame; wherein one of said frame and said sashes constitutes an operative member having a lateral surface thereon, substantially parallel to said plane, which surface constitutes said counter-surface; means for supporting said hose between said operative member and said bar; and a lever arm associated with said bar substantially parallel to said lateral counter-surface; and wherein a component of a pivotal movement



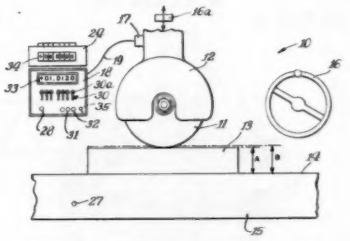
performed by said lever arm, directed transversely to said plane, is utilized for pressing said strip, wherein terminal portions of said hose and said bar are held by said supporting means in said operative member, a terminal portion of said bar constituting said pivot.

3,857,200

DIGITAL READOUT METHOD AND APPARATUS

Richard D. Hill, Glen Ellyn, Ill., assignor to A & A Engineering Company, Franklin Park, Ill.

Filed Mar. 15, 1973, Ser. No. 341,340
Int. Cl. B24b 49/02, 49/08, 51/00
U.S. Cl. 51—5 D 29 Claims



13. Apparatus for grinding a plurality of workpieces each to a preselected linear dimension, comprising:

a grinding wheel;

means for translating the grinding wheel;

readout display means for providing a digital display of the spacing of a grinding wheel from a reference position;

means for holding the workpieces in a preselected disposition relative to said reference position;

fixed means for dressing the grinding wheel at a position having a preselected fixed relationship to said reference position; and

reference display means adjacent said display means for maintaining an indication of the linear dimension representing said fixed preselected relationship.

3,857,201

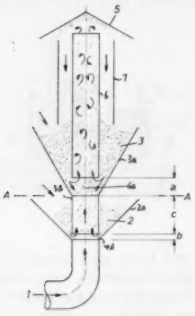
REGENERATING OF CASTING SAND

Hermann Jacob, Fachenfelder Weg 115, 2092 Horst, Germany

Filed July 2, 1973, Ser. No. 376,004
Claims priority, application Germany, July 6, 1972, 2233111
Int. Cl. B24c 1/00, 3/12; B02c 19/06
U.S. Cl. 51—8 R 8 Claims

1. In a method of regenerating casting sand, the steps of subjecting contaminant-coated spent casting sand to mechanical agitation; accelerating fresh uncontaminated casting sand; and contacting the accelerated fresh casting sand with said

spent casting sand so that said fresh and said spent casting sand are admixed and the contaminant coating on said spent



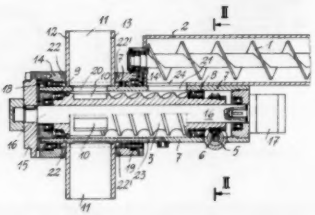
casting sand is at least partially scoured off by said fresh casting sand.

3,857,202

DEVICE FOR SURFACE SANDBLASTING BY METAL GRIT OR THE LIKE

Antonio Cavallucci, Corso Plebisciti 11, Milan, Italy (20129)

Filed Aug. 8, 1973, Ser. No. 386,700
Claims priority, application Italy, Aug. 16, 1972, 28222/72
Int. Cl. B24c *7/00*
U.S. Cl. 51—9 R **8 Claims**



1. A device for abrading the inner surfaces of tubes, comprising:

a first motor-driven screw;

a first tubular casing rotatably mounting said first screw;

a second motor-driven screw axially aligned with said first screw;

a second tubular casing having first and second ends and rotatably mounting said second screw; and

an impeller rotatably mounted axially of and adjacent said first end of said second casing for rotation independent of the rotation of said second screw;

said first casing having an opening adjacent one of its ends, the second end of said second casing being fixedly connected to said one end of said first casing in overlapping fashion, said second casing having an opening therein aligned with the opening in said first casing, said second screw adapted to rotate at a different rotational velocity than said first screw;

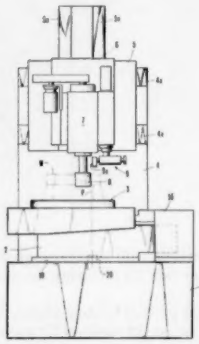
whereby the rotational velocity of said first screw is effective to feed abrasive grit to the receiving end of said second screw through said openings, and whereby the rotational velocity of said second screw is effective to feed abrasive grit to the central area of said impeller which imparts substantial radial velocity to said grit by centrifugal force.

3,857,203

GRINDING MACHINE FOR GENERATING AN EPITROCHOIDAL SURFACE ON A WORK

Hiroaki Asano, Chiryu, and Kazuhiro Sakane, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Mar. 12, 1973, Ser. No. 340,101
Claims priority, application Japan, Mar. 21, 1972, 47-33220[U]
Int. Cl. B24b *5/16*
U.S. Cl. 51—46 **6 Claims**



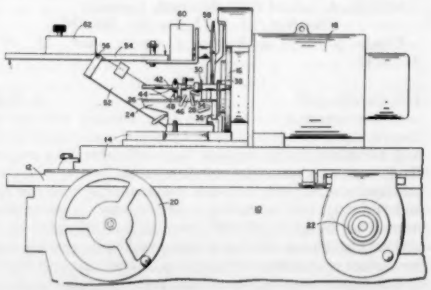
1. In a grinding machine for generating an epitrochoidal surface including a rotating sleeve which rotatably carries a work spindle at a given eccentricity with respect to the rotating sleeve, said rotating sleeve being mounted on a work head and adapted for a pivotal motion about the grinding point of a grinding tool rotatably carried by a tool rest to which is imparted a feeding motion, and a drive means to which said rotating sleeve is connected, the improvement comprising a first gear secured to the pivotable work head in concentric relationship with the rotating sleeve, a second gear secured to one end of the work spindle, third and fourth gears meshing with the first and second gears, respectively, and a support shaft rotatably carried by the rotating sleeve and on which said third and fourth gears are fixedly mounted in coaxial relationship with each other, whereby the work spindle is rotated at a given rate of rotation relative to the revolution of the sleeve through the first to fourth gears.

3,857,204

CENTERLESS GRINDING APPARATUS

Albert R. Richard, Weymouth, Mass., assignor to Richards Micro-Tool Co., Inc., Plymouth, Mass.

Filed Nov. 27, 1972, Ser. No. 309,706
Int. Cl. B24b *5/18*
U.S. Cl. 51—103 WH **4 Claims**



1. A centerless grinding apparatus especially adapted for a thin, flexible work piece comprising a base, a pair of spaced-

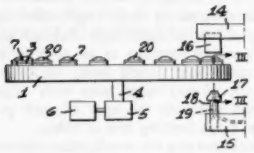
apart work supports on the base for receiving a cylindrical portion of the work piece, a grinding wheel adapted to operate upon a portion of the work piece extending beyond the work supports, a balanced arm medially pivoted on the base, a driven driving wheel rotatably supported on one end of the arm and adapted drivingly to engage the portion of the work piece between the supports, means on the other end of the arm for counterbalancing the arm and means for adjusting the position of the counterbalancing means to vary the force with which the driving wheel engages the work piece in full floating engagement, whereby the bearing force of the driving wheel is sufficient to drive without distorting the work piece.

3,857,205

DEVICE FOR THE FEEDING OF OPTICAL GLASSES, PARTICULARLY FOR SPECTACLES, TO A GLASS-TREATING MACHINE AND FOR THE REMOVAL OF SAID GLASSES THEREFROM

Camille Cesar Van Hove, Kapellen, Belgium, assignor to Buchmann Optical Industries, Kapellen, Belgium

Filed Dec. 12, 1973, Ser. No. 423,892
Claims priority, application Belgium, Dec. 12, 1972, 125232
Int. Cl. B24b *5/00*
U.S. Cl. 51—134 **8 Claims**



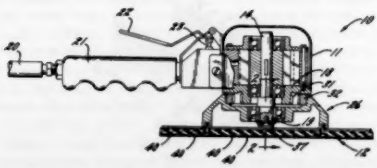
1. Device for the feeding of optical glasses, particularly for spectacles, to a glass-treating machine and for the removal of said glasses therefrom, said machine comprising a tool, means for rotating said tool, a head lying thereunder which is movable up and down and rotatable about a vertical axis, and means for moving said head to and away from said tool, with a glass holder and means to bring a glass in said holder between said head and tool and away from between said head and tool, which comprises a movable support provided with openings through which the glass-treating machine head can pass partly at least, a plurality of glass holders which bear with the lower part thereof at least in the support openings, and means for moving the support intermittently in such a way that each support opening can come in sucession between the head and tool of the glass-treating machine.

3,857,206

COMPOUND MOTION RUBBING MACHINE

Edward B. Heffran, Jr., c/o National Detroit, Inc., 2810 Auburn St., Winnebago, Ill. 61103

Filed Mar. 8, 1973, Ser. No. 339,164
Int. Cl. B24b *23/04*
U.S. Cl. 51—170 MT **9 Claims**



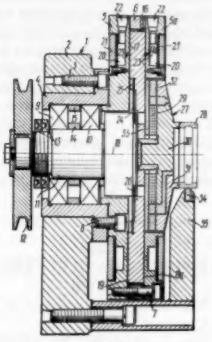
1. In a compound motion rubbing machine, the combination of, a frame, a drive shaft journaled on said frame with one end portion projecting downwardly therefrom, an eccentric shaft mounted on the projecting end portion of said drive shaft in radially offset parallel relation therewith, an inverted cup-shaped casing disposed around said eccentric shaft and rotatably mounted thereon for gyratory motion about the axis of said drive shaft as the latter rotates, a pinion gear stationarily mounted on the underside of said frame in coaxial relation with said drive shaft, said casing having a coaxial annular rim loosely encircling said pinion gear, a ring gear larger than said pinion gear fast in said rim and disposed around the pinion gear in meshing engagement with one side of the latter, and a rubbing shoe mounted on the lower end of said casing for movement therewith in rubbing engagement with a work surface, the amount of eccentricity of said eccentric shaft and the sizes of said gears being correlated to produce simultaneous gyrating and rotating motion of said casing during rotation of said drive shaft and generally epicycloidal motion of abrasive particles on said shoe relative to a work surface.

3,857,207

DEVICE FOR SUPPORTING A WORKPIECE FOR ROTATION

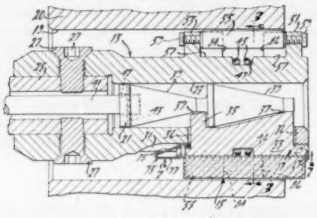
July Davidovich Avrutin, Grazhdansky prospekt 83/2, kv. 67; Iosif Davydovich Gebel, Svetlanovsky prospekt 35, kv. 94; Askold Ivanovich Nefedov, 2 Nikitinskaya ulitsa 8, kv. 5, all of Leningrad, and Solomon Abramovich Khilevich, ulitsa Tviryachaus 10, kv. 56, Vilnjus, all of U.S.S.R.

Filed Mar. 21, 1973, Ser. No. 343,408
Int. Cl. B24b *41/04*
U.S. Cl. 51—237 R **5 Claims**



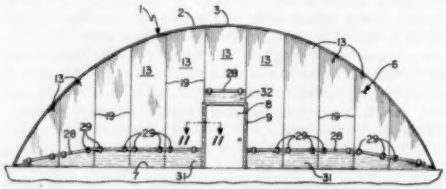
1. A device for supporting a workpiece for rotation, comprising: a casing; a rotor installed in said casing; said rotor having axially spaced ends with means for securing a workpiece to one of said ends; said rotor having at least two opposite circular supporting surfaces which are flat, parallel and perpendicular to the axis of rotation of said rotor and serve as its supporting surfaces; said casing having at least two circular flat, parallel supporting surfaces arranged adjacent a respective supporting surface of said rotor; means for forming a layer of a working pressure medium between said corresponding supporting surfaces of the said rotor and casing to separate them from one another; drive means for rotating said rotor; and means drivingly connecting said rotor to said drive means while providing radial support for said rotor and including a membrane whose stiffness in the axial direction is negligibly small as compared to the stiffness of said layer of the working medium, thus reducing to a minimum the effect produced by axial vibrations of the drive means for said rotor on the axial accuracy of rotation of the latter, said membrane extending perpendicularly to the axis of rotation of the rotor and being axially disposed between said ends of the rotor.

3,857,208
HONING TOOL
William H. Harris, Jr., Holland, Mich., assignor to Micromatic Industries, Inc., Detroit, Mich.
Continuation of Ser. No. 235,606, March 17, 1972, abandoned. This application Oct. 31, 1973, Ser. No. 411,360
Int. Cl. B24b 5/06
U.S. Cl. 51—346 3 Claims



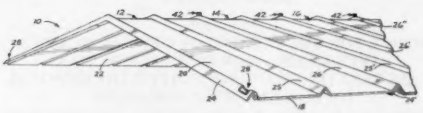
1. A honing tool comprising, in combination, a body adapted to be supported for rotational movement about a longitudinal axis in the bore of a workpiece, said body forming a longitudinally extending outwardly opening slot therein, a carrier member disposed in said slot for radial sliding movement relative to said body, means to move said carrier member radially relative to said body to selected positions, means connecting said carrier member to said body for limited tilting movement relative to the axis of rotation of said body, an abrasive honing member, means detachably connecting said abrasive honing member to said carrier member for movement therewith into and out of engagement with the bore of said workpiece, said body including shoulder portions longitudinally spaced on said body adjacent at least one side of said slot, said means connecting said carrier member to said body including an abutment portion formed on at least one side of said carrier member and disposed between said shoulder portions to limit longitudinal movement of said carrier member relative to said body, said abutment portion being disposed intermediate longitudinally spaced opposite ends of said carrier member about a median portion thereof relative to said body.

3,857,209
INFLATABLE SHELTER AND FLEXIBLE WALL THEREFOR
Paul E. Milliken, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 2, 1973, Ser. No. 412,073
Int. Cl. E04b 1/345
U.S. Cl. 52—2 15 Claims



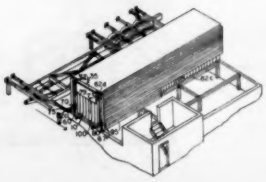
1. A flexible wall for use in an inflatable enclosure having a flexible roof comprising:
A. a vertical flexible wall suspended inside the enclosure;
B. means connecting the wall to the roof of the enclosure;
C. means connecting the wall to the floor of the enclosure; and
D. adjustment means permitting expansion and contraction of the wall to continuously adjust the height of the wall in response to any changes in the height of the roof when the enclosure is in an inflated condition, while maintaining the wall under vertical tension to prevent excessive horizontal movement of the wall.

3,857,210
INTERLOCKING PANEL HAYSTACK COVER
Harold V. Austin, P.O. Box 26, Beatty, Oreg. 97621
Filed May 4, 1973, Ser. No. 357,480
Int. Cl. E04d 1/34
U.S. Cl. 52—4 1 Claim



1. The combination of a stack of baled agricultural feed material and a frameless, stack-supported gable roof therefor, said stack including a row of bales forming a ridge extending along the top of the stack intermediate its lateral edges, with the roof resting directly on the bales and spanning the lateral edges and ridge-forming row, said roof comprising
a multiplicity of elongate flexible panels having corrugations extending along their length, each of said panels including a pair of oppositely inclined gable expanses integrally joined together at an apex in an inverted-V configuration, said panels being disposed side-to-side, transversely of said ridge, with their adjacent margins overlapped and with the apex of each panel disposed above the ridge-forming row of bales,
means interconnecting the overlapping adjacent margins of the panels, each expanse of one panel including female connector means in operative interconnection with male connector means on an adjacent expanse of another panel, said female and male connector means being disposed within similar marginal corrugations in said one and other panels, respectively, configured and positioned to interengage during an assembly sequence for said roof which comprises first lifting of said one panel at its apex, whereupon its oppositely inclined gable expanses flex toward each other, then lowering the panel onto said other panel in marginal overlapping relationship, whereupon engagement of the respective male and female connector means occurs as the gable expanses flex away from each other, and
means extending between the panels and the stack, tying them to the stack.

3,857,211
MULTILEVEL COMPONENTIAL HOUSE TRAILER
George Sharpton, 104 N. Tenth St., Lyons, Ga. 30436
Filed June 25, 1973, Ser. No. 372,939
Int. Cl. E04b 1/344
U.S. Cl. 52—65 1 Claim



1. A multilevel housetrailer comprising:
I. a lower story living unit including,

a. a floor and ceiling having an outer periphery and means connecting said floor and ceiling in vertically spaced relation at said outer periphery;
b. at least one floor and one ceiling extension pivotally attached to said floor and ceiling periphery respectively;
c. a plurality of wall panels enclosing at least portions of said floor and floor extension;
d. a split level component pivotally attached to said lower story living unit at the outer periphery intermediate said floor and ceiling thereof; and

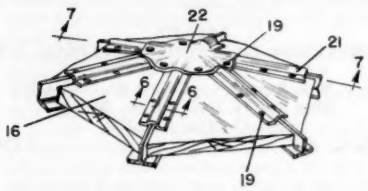
II. an upper living unit having,
a. the said ceiling as a floor, an upper ceiling, and a means connecting said ceiling and said upper ceiling;
b. at least one upper floor extension formed by said at least one ceiling extension unit;
c. at least one upper ceiling extension above said at least one ceiling extension; and
d. a plurality of second wall panels enclosing at least a portion of said upper living unit, and said at least one upper level floor extension.

3,857,212

HUB JOINTS FOR GEODESIC DOMES

Harry Reagan Barnett, 127 Sharon Dr., Pomona, Calif. 91767

Continuation of Ser. No. 279,457, Aug. 10, 1972, abandoned. This application Mar. 18, 1974, Ser. No. 451,771
Int. Cl. F16b *7/04;* **E04b** *1/58*
U.S. Cl. 52—81 **6 Claims**



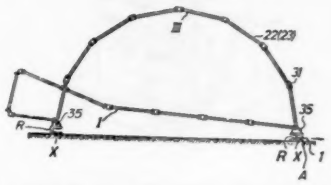
1. A Hub joint structure for geodesic domes including a foundation base, generally flat circular hub plates with each plate having first apertures therein adjacent its circumference, and second apertures therein spaced inwardly of said first apertures, T-section strut members attachable at opposing ends to said hub plates with each member having an outwardly extending vertical flange and a transverse horizontal flange, a portion of said vertical flange being removed at each end for a distance slightly greater than each hub plate radius to provide extended horizontal flanges, said horizontal flanges being angled away from said vertical flanges so as to flatly engage the outer surfaces of said hub plates and being tapered so that said strut ends abut and nest on said plates, and spaced apertures in said extended horizontal flanges aligned with said first and second apertures in said hub plates for receiving mounting elements therethrough for radially connecting said strut members to said hub plates, whereby the first connection of said hub plates to said foundation base and subsequent successive interconnection of said strut members and hub plates enables the upward formation and erection of a completed dome framework.

3,857,213

SIMPLIFIED CONSTRUCTION

Minoru Miyake, 194 of 1 Shimoshakujii, Nerima-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 13,003, Feb. 20, 1970, Pat. No. 3,708,944. This application Dec. 12, 1972, Ser. No. 314,326
Claims priority, Application Japan, Oct. 31, 1969, 44-87390
Int. Cl. E04b *1/32*
U.S. Cl. 52—86 **8 Claims**



1. In combination:
a. a foundation,
b. a first anchor and a second anchor in spaced relation in said foundation,
c. a flexible strand anchored at one end to one anchor of said first anchor and said second anchor,
1. said flexible strand having its other end passing through the other anchor of said first anchor and said second anchor,
d. tension means adjacent said other anchor and connected to said other end of said flexible strand,
e. a plurality of hollow frame members serially slidably disposed on said flexible strand and provided with a planar surface on each end of each frame member,
f. joint members on said flexible strand between adjacent frame members and having a joint planar surface adjacent each adjacent planar surface on each adjacent end of said adjacent frame member,
g. said tension means being operable to force each of said joint planar surfaces into engagement with the adjacent planar surface on said adjacent frame members,
h. said tension means being operable to concentrate tension upon said strand to cause said frame members to assume an erected arch configuration with said planar surfaces in contacting engagement,
i. said tension means being then operable to maintain a minimum level of tension forces on said strand sufficient to maintain said configuration,
j. said planar surfaces having a relatively low coefficient of friction, and
k. said joint member is provided with a spanning frame member aperture and a spanning frame member extends through said spanning frame member aperture.

3,857,214

METHOD OF MAKING TOMBSTONES AND PRODUCT THEREOF

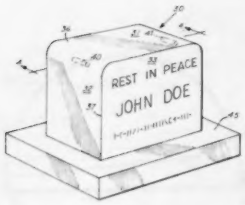
Carl D. Hedges, 1806 East 3rd St., Pueblo, Colo. 81001

Filed Nov. 15, 1972, Ser. No. 306,576
Int. Cl. E04h *13/00;* **E01f** *9/02*
U.S. Cl. 52—103 **3 Claims**

1. A composite tombstone comprising:
a. an exterior, unitarily formed one-piece hollow shell of fiber reinforced synthetic resin, said shell having at least one flat outer surface arranged for engraving an inscription thereon, said shell further including at least one open end with the open end being arranged to be inserted into a base at a point of use;
b. a solid, interior body formed from a heavy, hardened material and arranged to fill the interior of said exterior

shell, said body material being introduced into said shell in a semi-fluid state and allowed to harden, and

c. said shell includes a plurality of hollow, cylindrical tubes each having a longitudinal axis, each of said tubes being fixedly embedded along a portion of its outer surface into the inside surface of said shell and having its ends open,



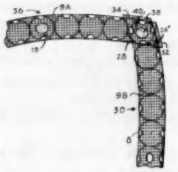
the longitudinal axis of each of said tubes being arranged parallel to a plane defined by the open end of said shell, the open ends of said tubes being arranged to communicate with the hollow interior of said shell so that the hardenable body material will at least partially fill said tubes to securely join said body to said shell.

3,857,215

CAN-CONTAINING CONSTRUCTION MEMBER

Alvin Edward Moore, Manini Way, Diamondhead, Bay St. Louis, Waveland, Miss. 39520

Filed Dec. 8, 1972, Ser. No. 313,454
Int. Cl. E04c *1/06*
U.S. Cl. 52—259 **22 Claims**



1. A strength-providing, plural-sided construction member, comprising:

a plurality of end-joined can rows, each of said rows comprising: cans having substantially parallel axes that extend transversely to the length of the row; at least one can-holding strip of row-strength-providing material on cans of the row; and bonding material between said strip and cans; and

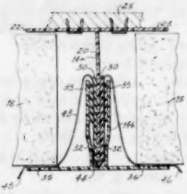
means fastening together each adjacent pair of rows at row ends in a strength-providing corner of said member, comprising: a row-end flange of a said strip in one of said pair of can rows, extending beyond the cans to which the strip is attached, and at said corner overlapping a portion of a strip of a second can row and overlapping an end can of said second row; and a rod-like element, passing thru said row-end flange, thru said overlapped strip portions, and fastened to said end can.

3,857,216

EASY RELEASE SUSPENSION SYSTEM

Morton Sherman, St. Petersburg, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Filed Aug. 7, 1973, Ser. No. 386,460
Int. Cl. E04b *5/57*
U.S. Cl. 52—489 **4 Claims**



1. A panel suspension system for forming a ceiling by means of a grid of suspension members supporting panels spanning the area between prefixed members comprising at least a first and a second mating element, said first mating element having a depending web portion with parallel, horizontal rows of teeth extending outwardly from both sides thereof,

said second mating element having a bifurcated upstanding web with parallel rows of teeth extending inwardly toward each other and adapted to engage said rows of teeth of said first mating element

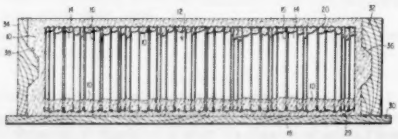
and a strip of flexible material, narrow with respect to the length of the mating elements, positioned between said first and second mating elements and at one end of said mating elements so as to prevent engagement of said rows of teeth of said first and said second elements for a minor portion of their length, whereby said first and said second elements can be easily disengaged to remove said ceiling panels.

3,857,217

LIGHTWEIGHT, RIGID STRUCTURAL PANEL FOR WALLS, CEILINGS AND THE LIKE

William F. Reps, Route 355 and Route 80, Urbana, Md.

Filed Nov. 15, 1972, Ser. No. 306,928
Int. Cl. EO4c *1/10, 2/36*
U.S. Cl. 52—589 **7 Claims**



1. A lightweight, rigid, structural panel of cementatious material comprising:

a. a core consisting of webbed material having a plurality of open-ended, separate tubular recesses of substantially equal height, a layer of very fine mesh reinforcing material adjacent to and covering one end of said recesses, said fine mesh material having a mesh on the order of ten per linear inch to insure the passage therethrough of only a sufficient amount of said cementatious material into said recesses to secure said layer of fine mesh material to said core, and a layer of coarse mesh material adjacent and covering the other end of said recesses, said coarse mesh material having a mesh on the order of four per linear inch to insure the ready passage therethrough of a greater amount of said cementatious material into said recesses than said first layer to secure said permeable material to said core, and

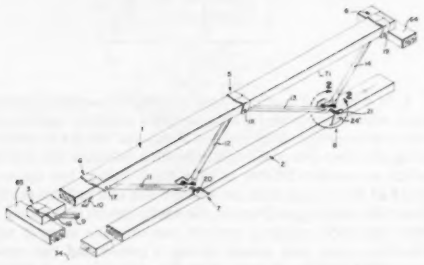
b. cementatious material covering said fine and coarse mesh material and said entire core to form a monolithic panel, said layers of fine and coarse mesh reinforcing material, when secured to said webbed material by said cementatious material, serve to prevent said panel from flexing under applied loads.

3,857,218

TRUSS JOISTS HAVING EDGE PIN CONNECTORS

Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Manufacturing Co., Inc., San Leandro, Calif.

Filed July 18, 1973, Ser. No. 380,215
Int. Cl. E04c *3/18*
U.S. Cl. 52—694 9 Claims



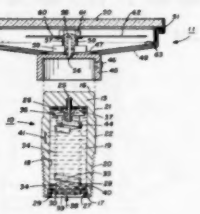
1. A truss joist comprising:
a. upper and lower wood chords, each having flat inner and outer faces and said chords having a width greater than their depth;
b. a plurality of sheet metal connectors mounted on said chords;
c. a plurality of strut members having openings formed in their ends and extending between said chords;
d. a plurality of pins mounted transversely of said chords pivotally securing the ends of said struts at the midpoint of said pins to said connectors wherein the pivot points are located at said inner faces of each of said chords;
e. said chords being formed with transverse semi-circular grooves having a depth approximately one-half the diameter of said pin for receiving said partially embedded pins;
f. said chords being formed with slots joining said inner and outer faces at the approximate center lines of said chords;
g. each of said connectors including a pair of seats engaging the outside faces of said chords, each connector having a pair of legs disposed in close fitting relation to the outside edges of said chords and connecting said seats and opposite ends of said pin and each of said connectors having an arm mounted in said slot connecting said seats and the mid portion of said pin;
h. said seats and legs of said connector and pin completely encapsulating said chords at their inner and outer faces and edges;
i. said connector arm being formed with an edge flange extending a substantial portion therealong and extending transversely of said chord for close fitting engagement therewith for transmitting forces from said strut members to the mid portions of said chords; and
j. said chords being formed with channels extending from their outer faces toward their inner faces at the approximate center line of said chords for force fit receipt of said flange of said connector.

3,857,219

OVERLOAD PROTECTED BOURDON TUBE

Robert D. Bissell, Orange, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 283,003, Aug. 23, 1972, Pat. No. 3,789,668. This application Sept. 19, 1973, Ser. No. 398,738
Int. Cl. B65b *3/04*
U.S. Cl. 53—37 4 Claims



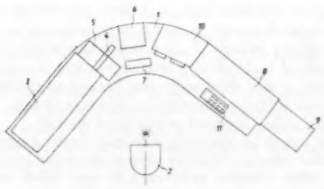
1. A method of pre-conditioning a Bourdon tube adapted for response to pressure variations acting externally thereon comprising the steps of providing a controlled volume of incompressible fluid internally of said tube corresponding substantially to the decreased internal volume of the tube when exposed to a predetermined value of increasing external pressure and sealing said tube to permanently contain said controlled fluid volume, said controlled fluid volume being less than the internal volume of said tube when said tube is exposed to values of external pressure below said predetermined value.

3,857,220

ARRANGEMENT FOR PROCESSING PRINTING ORDERS

Horst Schneider, Horrem; Berthold Fergg; Wolfgang Zahn, both of Munich; Friedrich Hujer, Grunwald, and Erich Nagel, Anzing, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

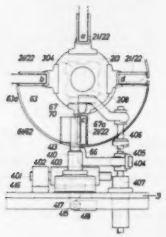
Continuation-in-part of Ser. No. 185,163, Sept. 30, 1971, abandoned. This application Aug. 22, 1973, Ser. No. 390,563
Claims priority, application Germany, Oct. 2, 1970, 2048552
Int. Cl. B65b *57/10*
U.S. Cl. 53—59 R 17 Claims



1. Photographic arrangement, comprising, in combination, first elongated signal carrier means having a plurality of first frames and a plurality of first frame lines each separating two consecutive ones of said plurality of first frames, each of said first frames having an original; second elongated signal carrier means having a plurality of prints, each constituting a reproduction of a corresponding one of said originals; first cutting means for cutting said first elongated signal carrier means at said frame lines into strips having a predetermined maximum length, upon receipt of a first start signal; second cutting means for cutting said second elongated signal carrier means upon receipt of a second start signal; and control means interconnected between said first and second cutting means, for

furnishsing said first start signal in dependence upon the operation of said second cutting means.

3,857,221
FOLDING DEVICE FOR PACKAGING MATERIAL
Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsburg, Germany
Filed Nov. 27, 1973, Ser. No. 419,467
Int. Cl. B65b *11/32*
U.S. Cl. 53—234 **5 Claims**



1. A device for folding a sheet of wrapping material around external surfaces of an article of parallelepipedonal shape, said device comprising, in combination:

a support;

article receiving means rotatably mounted on said support to be rotatable about an axis;

cell defining means provided by wall members of said article receiving means to define a plurality of cells spaced at angular intervals about said axis and extending in a generally radial direction relative thereto, each cell being adapted to receive one said article;

means to rotate said article receiving means stepwise about said axis to cause each said cell to be arrested successively at a first station, a second station, a third station and a fourth station of said device;

means to introduce a sheet of wrapping material into one said cell when the latter is located at said first station;

means to introduce said article into said cell when the latter is located at said second station, whereby said sheet of wrapping material is disposed between said article and walls of said cell in which said article is received, with lobes of said sheet projecting beyond an end face of said article and in a direction parallel to said axis;

carrier means disposed at said third station;

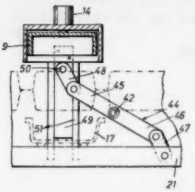
guide means co-operating with said carrier means;

a folder member rotatably supported on said carrier means;

a roller member connected to said folder member to rotate therewith and rollably engaging said guide means; and

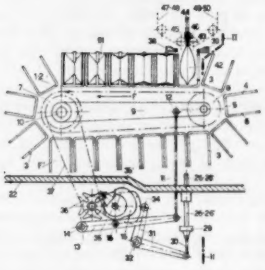
means to reciprocatably displace said carrier means along said guide means, thereby to impart simultaneous rotational and translational motion to said folder member, whereby the latter is moved towards and along the axial end face of said cell located at said third station when said carrier means is displaced along said guide means in a first direction and said folder member is moved away from said cell when said carrier means is displaced in a direction opposite to said first direction, said displacement of said carrier means in said first direction causing said folder member to engage one of said projecting lobes and to fold the latter against said face of said article in said cell at said third station.

3,857,222
PACKING MACHINE
Ludwig Grebe, Wallau, Germany, assignor to Kramer & Grebe KG Maschinen und Moldelifabrik, Wallau/Lahn, Germany
Filed Apr. 13, 1973, Ser. No. 350,911
Claims priority, application Germany, Apr. 15, 1972, 2218334
Int. Cl. B65b *31/02*
U.S. Cl. 53—112 A **7 Claims**



1. In a packing machine have a framelike welding mechanism which is provided with a separate drive for welding of two container-like deformed foil sheets and having an evacuating chamber composed of two boxlike halves, a first half of which is mounted liftably and lowerably below, and the second half above, said foils and wherein one said half houses the framelike welding mechanism, the improvement comprising at least one rack system at each of two opposite sides of said chamber, each rack system having a pinion and two racks connected pairlike to each other by said pinion and in turn connected to respective chamber halves.

3,857,223
PACKAGE FORMING DEVICE
Antonio Dominici, 8 Via Ruggero d'Andreotto, Perugia, Italy
Filed Feb. 7, 1974, Ser. No. 440,542
Claims priority, application Italy, Feb. 13, 1973, 48212/73
Int. Cl. B65b *1/24*
U.S. Cl. 53—124 A **5 Claims**



1. A device for forming containers into prismatic packages and to thereafter convey and discharge them, said device comprising:

two lateral mold plates movable towards each other;

an upper mold plate positioned above said lateral mold plates, said three mold plates forming a molding station;

a plurality of U-shaped trays to receive said containers;

a vertically oscillatable and intermittently movable conveyor to lead said trays in succession through said molding station;

first actuating means to press a container in one of said trays against said upper mold plate by lifting a free end of said conveyor;

second actuating means positively associated with said first means to lift said lateral mold plates concomitantly with said upward lifting of the conveyor and press them against the two sides of an unformed container;

Geneva motion means associated with said first and second means, to stop said conveyor when a tray with an unformed container reaches the location of said mold plates and during said container-molding operation and remove it sucessively from said station to convey another tray to said molding station.

3,857,224

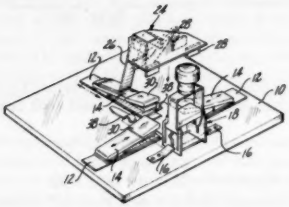
COIN PACKAGING APPARATUS

John G. Hewitt, 9344 E. Bristol, Davison, Mich.

Filed Oct. 30, 1972, Ser. No. 302,012

Int. Cl. B65b *61/00*

U.S. Cl. 53—131 **1 Claim**



1. An apparatus for packaging coins in individual folders, the folders being adapted to be folded in half over the coin to form a closed side and three open sides, the apparatus comprising a base, clip means on said base for retaining and positioning the folder, three elongated rectangular magnetic members fixed to said base, said magnetic members disposed in the form of a T with each of said magnetic members having one of its short sides disposed to be adjacent an open side of the folder when the folder is mounted to said base, said clip means being disposed to be adjacent the open side of said folder opposite the closed side of said folder, a stapler disposed on each of said magnetic members whereby said staplers can be removed to permit said folder to be mounted to said base and then can be moved longitudinally along said magnetic members to the proper position to staple the three open sides of said folder, a stamper mounted to said base along the closed side of said folder and having a stamper positioned above said folder and operable when actuated to provide indicia on said folder, and means for simultaneously actuating said staplers, said means comprising an actuating member fixed to one of said staplers to be disposed over said staplers and operable upon being pushed downwardly to simultaneously engage and actuate said staplers.

3,857,225

BEAN THINNING AND CUTTING DEVICE

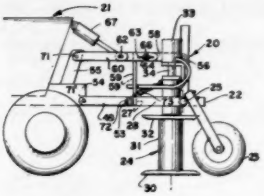
Glenn C. Knudson, Larimore, N. Dak. 58251

Continuation-in-part of Ser. No. 233,218, March 9, 1972, abandoned. This application Nov. 30, 1972, Ser. No. 310,906

Int. Cl. A01d *55/26*

U.S. Cl. 56—13.6 **1 Claim**

1. A bean cutting device adapted to be mounted to a tractor, said device comprising a frame, wheels mounted to the outer opposing ends of the frame for supporting the frame on the tractor, a plurality of sets of cutter blade mechanisms mounted to said frame, each cutter blade mechanism having a blade, a circular drum, a shaft, a hydraulic motor, and a bracket, said blades being flat disc-like with a circular outer circumferential cutting edge, said blade being mounted to the lower end of the circular drum with the outer circular edge of the blade projecting outward beyond the outer circumference of the drum, said shaft being of reduced size in relation to said drum and fixed coaxially to the upper end of said drum and projecting upward therefrom, said shaft being rotatably mounted to said bracket, so that said shaft can rotate about its center axis to rotate said drum and blade, said hydraulic motor being fixed to said bracket and having an output drive to drive said shaft to rotate said shaft to thereby individually power the blade in each mechanism said drum having a radius of at least



approximately one third the radius of said blade and larger than said shaft, said brackets of each set of blade mechanism being pivotally mounted about a horizontal axis to said frame to pivot said blade, drive shaft and hydraulic motor about said horizontal axis and to individually pivot said blade and drum toward the rear of said tractor, stop means to prevent said blades in said sets from pivoting forward, and spring means to urge said blade sets forward against said stop means.

3,857,226

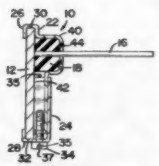
THATCHER

Costas Sifakas, 4803 Arcadia Rd., Holiday, Fla. 33589

Filed Oct. 11, 1073, Ser. No. 405,589

Int. Cl. A01d *55/18*

U.S. Cl. 56—295 **10 Claims**



1. An agricultural implement designed to be used as a thatcher in combination with a rotary blade of a lawnmower, said implement comprising: a raking means, attachment means mounted on said blade in predetermined spaced distance from one end thereof, anchor means securely fastened to said raking means, said attachment means comprising a first and a second bracket movably engaging one another and interconnecting the blade and said anchor means.

3,857,227

CUTTER HEAD FOR PICKING FRUIT

Baruch Rosenberg, 4 Hadekalim St., Hod Hasharon, Israel

Filed Jan. 31, 1974, Ser. No. 438,409

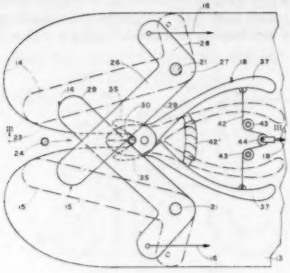
Claims priority, application Israel, Jan. 31, 1973, 41435

Int. Cl. A01g *19/08*

U.S. Cl. 56—335 **11 Claims**

1. A cutter head for picking fruit growing on a tree comprising a base plate adapted to be supported on one end of an elongated rod and having a guide slot that opens at the unsupported end of the plate and is adapted to receive the stem of a piece of fruit growing on a tree, means on said base plate for urging a stem in the slot toward the crotch thereof, a cutter mounted on the plate having a pair of cutter bars positioned

adjacent the crotch of the slot, and a selectively operable cutter actuating mechanism for imparting relative movement



to the cutter bars thereby severing a stem captured in the crotch.

3,857,228

TWISTING FRAME

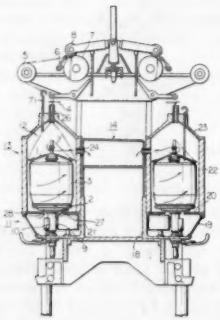
Teiji Nakahara; Misao Ueda, both of Kyoto; Minoru Kuninaga, Nagoakakyo, and Junichi Teranishi, Joyo, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Oct. 18, 1973, Ser. No. 407,621

Claims priority, application Japan, Oct. 25, 1972, 47-107393; Feb. 16, 1973, 48-19512; Feb. 22, 1973, 48-21855

Int. Cl. D01h *1/00*

U.S. Cl. 57—56 **8 Claims**



1. A twisting frame provided with a plurality of twisting spindles, each of said spindles being driven by a tangential belt running along the length of the frame, wherein a duct assembly comrises a belt covering duct (**11**), which covers said tangential belt;

a plurality of twisting units;

a twisting zone covering duct (**13**) for each said twisting unit, said twisting units each being provided with a twisting spindle;

a main duct (**14**) mounted on and extending along the whole length of the frame;

first means for connecting said belt covering duct to said twisting unit covering duct of the twisting zone; and second means for connecting said twisting zone covering ducts to said main duct.

3,857,229

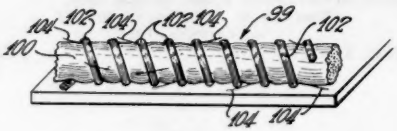
REINFORCEMENT FOR TIRES AND METHOD OF MAKING SAME

Alfred Marzocchi, Cumberland, R.I., assignor to Owens Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 107,193, Jan. 18, 1971, Pat. No. 3,776,293, which is a division of Ser. No. 664,020, Aug. 29, 1967, Pat. No. 3,631,667. This application Dec. 4, 1972, Ser. No. 312,003

Int. Cl. D02g *3/40, 3/48, 3/18*

U.S. Cl. 57—140 C **4 Claims**



1. A reinforcement cord construction adapted for incorporation into vulcanized rubber products, said cord construction comprising:

a core formed of a plurality of gathered-together staple glass fibers, said core having random staple fiber ends protruding from the main body of the core, and

a continuous assembled plurality of continuous glass filaments wound in repeating spirals to yield repeated winds or courses about said core, said repeated winds or courses being spaced apart sufficient to provide an exposure of a plurality of staple fiber ends.

3,857,230

YARNLIKE PRODUCT WITH SPACED POLYMER RINGS

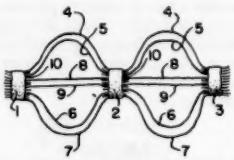
Ole-Bendt Rasmussen, Topstykket 7, Copehhagen, Denmark

Division of Ser. No. 120,186, March 2, 1971, Pat. No. 3,762,142. This application July 20, 1973, Ser. No. 380,978

Claims priority, application Denmark, Apr. 2, 1970, 1664/70

Int. Cl. D02g *3/00;* **B02g** *3/40*

U.S. Cl. 57—140 J **8 Claims**



1. A yarnlike product formed of a plurality of filamentitious structures arranged in a substantially untwisted elongated coherent bundle, said bundle having at each of a plurality of spaced points along the length thereof a distinct applied band of solid polymer extending as a continuous ring around the periphery of a small localized compact section of the bundle and holding said structures in said coherent bundled relation, the intervening sections of said bundle between adjacent pairs of rings being substantially greater in length than said localized sections and having the filamentitious structures therein in loose unrestrained condition of substantially greater bulk than said compact sections.

3,857,231

METHOD FOR DOUBLE CREELING FEED YARN

Walter D. Womer, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 29, 1972, Ser. No. 284,461
Int. Cl. D02g 3/02
U.S. Cl. 57—156 6 Claims

1. A method for double creeling feed yarn, comprising:
drawing the tail end yarn of an emptying package and the free end yarn of a full package; and then
establishing a connection between the drawn tail end yarn and the drawn free end yarn at a location in the drawn portions of said yarns said yarn being drawn to have a diameter in the range of about 40 percent to about 90 percent of its undrawn diameter prior to establishing said connection so that the connection will pass through yarn processing guides without being hung up or caught in said guides.

3,857,232

FILAMENT YARN AND PROCESS TO PREPARE SAME

Karl Heinrich, Bobingen, and Norbert Heichlinger, Konigsbrunn, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Lucius & Bruning, Frankfurt-/Main, Germany

Filed July 10, 1973, Ser. No. 378,017
Claims priority, application Germany, Feb. 19, 1973, 2308138
Int. Cl. D02g 3/34
U.S. Cl. 57—157 R 6 Claims

1. A process for preparing essentially smooth filament yarns having several loose filament ends sticking out, wherein at least a portion of the filaments used have a flex abrasion resistance of below about 1,500 cycles and wherein a filament bonding is imparted to the filament yarns subject to this treatment and wherein same are then submitted to a transversal stress, at which occasion the filaments having a flex abrasion resistance of below about 1,500 cycles break in irregular intervals.

3,857,233

VOLUMINOUS FILAMENT YARN AND PROCESS TO PREPARE SAME

Jutta Cardinal, Hofheim, Taunus; Karl Heinrich, and Gunther Bauer, both of Bobingen, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed July 10, 1973, Ser. No. 378,018
Claims priority, application Germany, Feb. 19, 1973, 2308031
Int. Cl. D02g 3/00, 3/34
U.S. Cl. 57—157 R 8 Claims

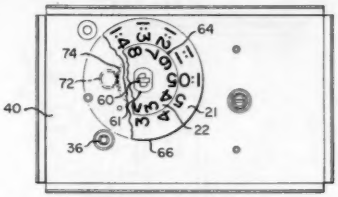
1. Process for preparing a voluminous filament yarn with several loose filament ends sticking out by means of false twist texturization including the use of filaments having — at least partially-a flex abrasion resistance of less than about 1,500 cycles, said filament yarns being fed into known false twist texturizing devices and texturized therein, whereby the filaments having flex abrasion resistance values of less than about 1,500 cycles break in irregular intervals due to the transversal stress applied within the texturization area, interlacing the thus obtained loose filament ends sticking out, at least temporarily.

3,857,234

DIGITAL TIMER MEANS AND METHOD OF MAKING THE SAME

Paul T. Flumm, Oakville, and Vernon B. Harris, Waterbury, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 20, 1973, Ser. No. 390,024
Int. Cl. G04f 3/04
U.S. Cl. 58—21.14 4 Claims



1. In combination, a frame means, a clock means carried by said frame means for providing time of day readings, a motor means carried by said frame means for driving said clock means, a digital timer means carried by said frame means for being set for a desired period of time within limits of said digital timer means, and means carried by said frame means for interconnecting together said motor means and said digital timer means to run said digital timer means for said set period of time thereof, said digital timer means having digital reading means for indicating the set period of time thereof, said reading means comprising two concentrically disposed different sized discs having time indicating indicia on the outer peripheries thereof, the smaller disc having said time indicating indicia comprising numerals from "0" to "9" to respectively represent unit minutes, the larger disc having said time indicating indicia comprising numerals from "0" to "5" and "1:0" to "1:5" to respectively represent tens of minutes coupled respectively with no hours and 1 hour whereby said digital timer means can be set for a desired period of time between 1 minute and 1 hour and 59 minutes.

3,857,235

ELECTRICAL CLOCK MOVEMENT

Robert Wolber, Lauterbach/Wurtt, Germany, assignor to Firma Gebruder Junghans G.m.b.H.

Continuation of Ser. No. 144,625, May 18, 1971, abandoned, which is a continuation of Ser. No. 680,069, Nov. 2, 1967, abandoned, which is a division of Ser. No. 471,207, July 12, 1965, Pat. No. 3,375,653. This application Aug. 1, 1972, Ser. No. 277,514
Int. Cl. G04c 3/04; G04b 13/02
U.S. Cl. 58—23 D 1 Claim

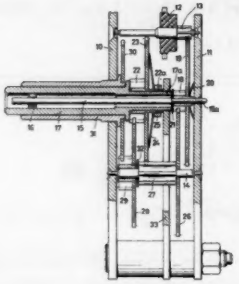
1. A movement for a balance wheel driven electric timepiece comprising:
a front bearing plate;
a rear bearing plate spaced from said front bearing plate;
an intermediate bridge disposed between said plates;
a generally cylindrical hour shaft mounted for rotation in said front bearing plate;
an hour wheel coaxially mounted on one end of the hour shaft between the front bearing plate and the bridge for rotation with the hour shaft;
a generally cylindrical minute shaft mounted for rotation within said hour shaft and in said bridge;
a minute wheel and a minute pinion coaxially mounted on said minute shaft between the hour wheel and the bridge for rotation with the minute shaft;

a second shaft mounted for rotation within said minute shaft and in said rear bearing plate;

a second wheel and a second pinion coaxially mounted on the second shaft between the bridge and the rear bearing plate for rotation with the second shaft;

an arbor extending between said plates in parallelism with said shafts and spaced laterally therefrom, said bridge partially embracing said arbor;

a first intermediate wheel and pinion mechanism mounted for rotation on the axis of said arbor and mechanically



interconnecting the second pinion and the minute wheel;

a second intermediate wheel and pinion mechanism mounted for rotation on the axis of said arbor and mechanically interconnecting the minute pinion and the hour wheel,

said mechanisms being relatively rotatable and disposed between the plates; and

a balance wheel driven ratchet and stepping wheel mechanism rotatably mounted between said plates, said mechanism being connected to the second wheel for driving the latter to operate the entire movement.

3,857,236

POSITIONING ARRANGEMENT FOR A ROTATING PART IN A TIMEPIECE

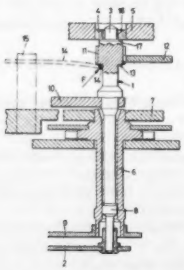
Hugues Burki, L'Orient, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services SA, Bienne, Switzerland

Filed July 5, 1974, Ser. No. 486,106

Claims priority, application Switzerland, July 10, 1973, 10035/73

Int. Cl. G04b *33/00, 13/02*

U.S. Cl. 58—59 **6 Claims**



1. A positioning arrangement for a rotating part in a timepiece having a toothing engaged with a driving toothing, wherein said rotating part pivots with play in at least one bearing and comprises a shoulder against which a resilient element presses continuously, exerting upon said rotating part a force having an axial component and a horizontal component, said horizontal component being directed towards the axis of said driving toothing.

3,857,237

WRISTLET

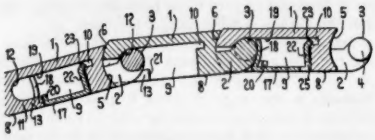
Andre Brauchi, President Wilson 4, 2300 La Chaux-de-Fonds, Switzerland

Filed June 11, 1973, Ser. No. 368,491

Claims priority, application Switzerland, June 19, 1972, 9168/72

Int. Cl. F16g *13/00*

U.S. Cl. 59—80 **13 Claims**



1. A wristlet comprising links articulated together, said links having unbroken top and longitudinal side surfaces and defining a chamber closed along the top and longitudinal sides of the link, a hinge member at one end of the link, a holding portion in said chamber at the end of the link opposite to said hinge member to receive the hinge member of an adjacent link, and locking means to lock said hinge member in said holding portion, the length of said hinge member being less than the whole width of the wristlet.

3,857,238

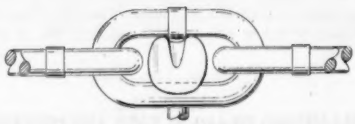
CONNECTOR HOOK HAVING ARCUATE CHANNEL ON FACE OF FLARED HEAD

Roger L. Gower, Suite 302, 1911 Jefferson Davis Hwy., Arlington, Va. 22202

Filed Mar. 19, 1973, Ser. No. 342,352

Int. Cl. F16g *15/04;* **B60c** *27/08*

U.S. Cl. 59—93 **3 Claims**



1. In combination, a hook having a shank, a throat, a platelike head having a face, said head being formed integrally with the said shank, and upon the face of said head, an arcuate channel beginning at a substantially central point on said face and extending toward the border thereof where it will terminate adjacent the side of said shank outermost from said throat, said channel thus permitting movement of said plate past the flash of a link of electric welded chain.

3,857,239

SELECTABLE-IMPULSE SOLID PROPELLANT ROCKET MOTOR

Winford G. Brock, Athens, and James C. Hodges, Jr., Huntsville, both of Ala., assignors to The United States of America are represented by the Secretary of the Army, Washington, D.C.

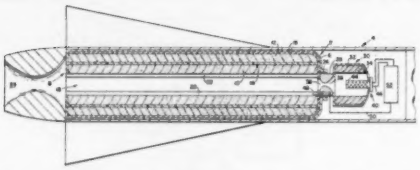
Filed Aug. 8, 1966, Ser. No. 571,143

Int. Cl. B63h *11/00;* **F03h**

U.S. Cl. 60—204 **10 Claims**

1. A selectable-impulse solid propellant rocket motor comprising, in combination: a motor case having a substantially

cylindrical external wall which forms a chamber, said wall being formed on its aft end with a converging-diverging nozzle, said wall also closing the forward end of the chamber except for a coaxial opening in communication with said chamber whereby hot gas can be introduced into said chamber; a solid rocket propellant grain disposed in said chamber, said grain including a plurality of adjacent zones of propellant, the center of the grain having an axial perforation extending from end to end therethrough along the center axis thereof; a



thin inhibitive barrier completely separating said adjacent propellant zones and formed of a material incapable of supporting its own combustion; and a rocket-type gas generator unit having exhaust nozzle means on its aft end, said means being secured to said motor case about said coaxial case opening, whereby hot gases produced by said unit may be directed through said opening and said axial perforation for removing each said inhibitive barrier between adjacent propellant zones.

3,857,240

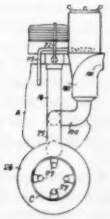
PRIME MOVERS

Thomas McIntyre, Barrack St., Perth 6000, Australia

Filed Feb. 28, 1972, Ser. No. 229,643

Int. Cl. B63h *11/02*

U.S. Cl. 60—221 **16 Claims**



1. A prime mover comprising a gas generating unit including a combustion chamber having a gas outlet, a gas duct connected to said gas outlet, a first automatic mechanism for pumping a measured quantity of air into the combustion chamber once per working cycle of the unit, a second automatic mechanism for pumping a measured quantity of liquid fuel into the combustion chamber once per working cycle of the unit, an automatic shutter mechanism for momentarily blocking the passage of gas from the gas outlet to the gas duct at the end of each working cycle, and an interlinking mechanism for sequentially operating the first and second automatic mechanisms and the automatic shutter mechanism; and a liquid filled pipeline into which combustion gases of the unit are discharge by jet means by way of said gas duct; said prime mover further comprising means for venting the combustion chamber of the gas generating unit once per working cycle of the unit whenever during said working cycle the gas pressure in the combustion chamber falls to a value below a predetermined value, said venting means comprising valve means connected to said gas duct for automatically venting said gas duct in response to gas pressure changes in the combustion chamber.

3,857,241

FUEL CONTROL APPARATUS FOR GAS TURBINE ENGINE REHEAT SYSTEMS

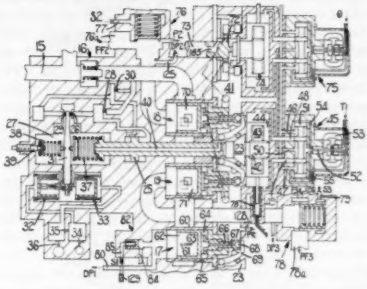
Geoffrey Arthur Lewis, Solihull, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Apr. 6, 1973, Ser. No. 348,634

Claims priority, application Great Britain, June 21, 1972, 29000/72

Int. Cl. F02c *9/06, 9/08*

U.S. Cl. 60—243 **4 Claims**



1. A fuel control apparatus for a gas turbine engine reheat system having a plurality of burners, comprising a pump, first, second and third variable metering orifices in parallel, for controlling fuel flow from said pump to first, second and third reheat burners respectively, said variable metering orifices including control members respectively positioned by first, second and third servo pressure signals, means responsive to operating parameters of the engine to derive said servo pressure signals from the pressure upstream of said metering orifices and from a reference pressure, first, second and third throttle valves between said first, second and third metering orifices respectively and the associated burners, said first, second and third throttle valves being respectively responsive to first, second and third signal pressures, means responsive to a first difference in pressure between the pressures downstream of the first and second metering orifices for generating said second signal pressure, said second signal pressure thereby actuating said second throttle valve to maintain the pressure downstream of said second metering orifice equal to the pressure downstream of said first metering orifice, means responsive to a second difference in pressure between the pressures downstream of the first and third metering orifices for generating said third signal pressure, said third signal pressure thereby actuating said third throttle valve to maintain the pressure downstream of said third metering orifice equal to the pressure downstream of said first metering orifice, means for maintaining the pressure difference across the first metering orifice substantially constant for a given engine speed, and selector means for providing said first signal pressure from whichever of the pressures downstream of said second and third throttle valves or said reference pressure is the highest.

3,857,242

GRAVITY-BUOYANCY MOTOR

Ralph W. Gilmore, P.O. Box 426, Brundidge, Ala. 36010

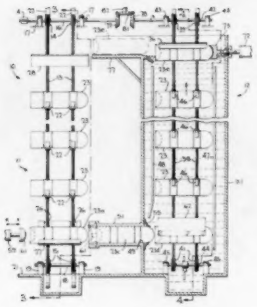
Filed Mar. 25, 1974, Ser. No. 454,456

Int. Cl. F01k *7/00;* **F03g** *7/00*

U.S. Cl. 60—495 **9 Claims**

1. A gravity-buoyancy motor comprising: a fluid-filled receptacle; a first vertically disposed conveyor mounted within said receptacle, said conveyor having downwardly open bracket arms mounted thereon at vertically spaced intervals; a first means for moving a plurality of closed and hollow tanks one-at-a-time through an opening near the bottom of said receptacle so as to place said tanks beneath said brackets; a first output shaft connected to said conveyor for rotation therewith as said tanks are buoyed upwardly as each are

placed beneath said brackets; a second vertically disposed conveyor having upwardly open bracket arms mounted theron at vertically spaced intervals; a second means for moving said tanks one-at-a-time from the upper portion of said receptacle onto each of said second conveyor bracket arms; said first moving means being so disposed as to move said tanks away



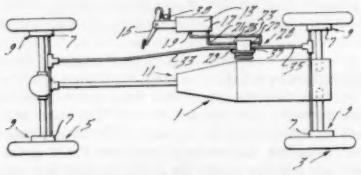
from said second conveyor at the lower portion thereof and through said opening as said tanks are lowered by gravity from the top of said bottom portion of said second conveyor; a second output shaft connected to said second conveyor for rotation therewith as said tanks are so lowered by gravity; and a power output means interconnecting said first and said second output shafts.

3,857,243

HYDRAULIC BRAKE BOOSTER AND SYSTEM

Joseph W. Douglas, Chelsea, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 30, 1972, Ser. No. 311,029
Int. Cl. F01b *9/00*
U.S. Cl. 60—538 **14 Claims**



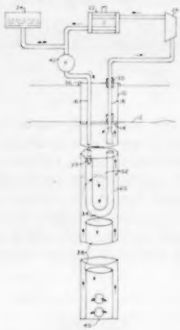
1. Hydraulic booster apparatus for a hydraulic brake system of a vehicle comprising a housing, an inlet and an outlet in said housing, pressure boosting and control means in said housing, first passage means connecting said inlet to said pressure boosting and control means for supplying fluid to the latter, second passage means connecting said pressure boosting and control means to said outlet for supplying fluid from the pressure boosting and control means to said outlet, means for actuating said pressure boosting and control means to increase the pressure of fluid in said second passage means over the pressure of fluid in said first passage means, and prevent means for preventing the ratio of the pressure of fluid in said second passage means to the pressure of fluid in said first passage means from exceeding a predetermined ratio, said prevent means including a member movable in said housing, a first area of said member being subjected to the pressure of fluid in said first passage means, a second area of said member being subjected to the pressure of fluid in said second passage means, the ratio of said second area to said first area being said predetermined ratio.

3,857,244

ENERGY RECOVERY AND CONVERSION SYSTEM

Reese E. Faucette, 11315 Crestfield Dr., Huntsville, Ala. 35803

Filed Nov. 2, 1973, Ser. No. 412,340
Int. Cl. F03g *7/00*
U.S. Cl. 60—641 **26 Claims**



1. An energy conversion system comprising:
a first pipe extending downward into a cavity containing environmental heat;
a heat absorbing heat exchanger positioned in said cavity proximate to the lower end of said first pipe and said heat absorbing means having an inlet and outlet;
a uni-directional flow nozzle interconnecting the lower end of said first pipe and the inlet of said heat absorbing means, said uni-directional nozzle enabling flow through it from said first pipe to said heat absorbing means;
a second pipe extending from said outlet of said heat absorbing means upward to the upper end of said cavity;
a fluid; and
a heat load connected to the upper end of said first and second pipes and enclosing said fluid whereby said fluid is vaporized in said heat absorbing means by environmental heat, the resulting vapor flows upward through the said second pipe through said heat load after which it liquifies and forms a pressure head in said first pipe above said nozzle creating the pressure causing the fluid to be forced through said nozzle and again vaporized and the cycle repeated.

3,857,245

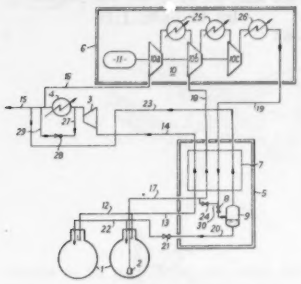
RELIQUEFACTION OF BOIL OFF GAS

James Kevin Jones, 2, Cranbourne Close, Ashton-under-Lyne, Lancashire, England

Filed July 20, 1973, Ser. No. 381,235
Claims priority, application Great Britain, June 27, 1973, 30455/73
Int. Cl. F01k *25/08*
U.S. Cl. 60—651 **12 Claims**

1. A method of reliquefying a part of the boil-off gas from a ship's cargo of liquefied natural gas, which boil-off gas has been compressed for feeding as fuel to the ship's motor, said method comprising the steps of separating a portion of the boil-off gas stream that has been compressed for feeding to the ship's boilers, further compressing said separated portion to a

higher pressure, cooling said further compressed portion to condense it, the cooling being effected in part by utilizing at least part of the sensible cold in the boil-off gas prior to compression and in part by cold obtained by expanding the condensate, recovering reliquefied boil-off gas from the liquid fraction of the expanded condensate, and injecting liquefied natural gas into the boil-off gas at a point before the further compressed portion is cooled to condense it.



3,857,246

APPARATUS FOR ADVANCING CONVEYORS OF MINING MACHINES IN UNDERGROUND EXCAVATIONS

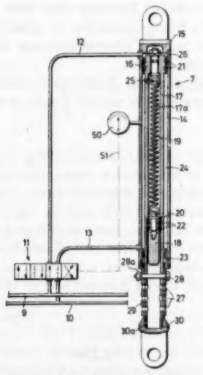
Hans-Christian Roenspies, Bochum-Langendreer, and Manfred Vogt, Herne, both of Germany, assignors to Kloeckner-Werke AG, Duisburg, Germany

Filed Apr. 12, 1973, Ser. No. 350,469

Claims priority, application Germany, Apr. 26, 1972, 2220452

Int. Cl. E21d *11/00*; **F15b** *13/04*, *15/24*

U.S. Cl. 61—45 D **21 Claims**



1. Apparatus for displacing heavy and bulky structures, particularly for pushing a material evacuating conveyor and material removing means toward the mine face in an underground excavation, comprising an anchor; a fluid-operated motor including a cylinder having a closed end, a piston reciprocable in and defining with said cylinder a first chamber adjacent to said closed end, a hollow piston rod connected to said piston and having an end extending from said cylinder in a direction away from said closed end, one of said ends being connected to said anchor and said piston rod having a fluid-filled compartment and defining with said cylinder and with said piston a fluid-filled second chamber, means communicating said second chamber with said compartment, an axially movable plunger in said compartment, first and second stops provided in said piston rod to limit the extent of movement of said plunger, said first stop being engaged by said plunger when the latter is nearest to said piston, and biasing means for urging said plunger against said first stop; a source of pressurized fluid; and valve means actuatable in one position to block fluid flow from said second chamber and to connect said source with said first chamber to thereby increase the distance between said closed end and said piston so that the other of said ends moves away from said anchor and the volumes of said first and second chambers respectively increase and decrease whereby the fluid flowing from said second chamber into said compartment moves said plunger from saif first against said second stop to thus terminate the admission of fluid into said first chamber, said valve means being further actuatable to a second position to permit the outflow of fluid from said second chamber and to thus permit said plunger to return into engagement with said first stop under the action of said biasing means while said first chamber remains sealed by said valve means, said piston being movable in said cylinder through a predetermined maximum distance exceeding that distance which said piston must cover to transfer from said second chamber into said compartment enough fluid to move said plunger from said first stop against said second stop so that said piston can cover said maximum distance in at least two stages the second of which takes place in response to renewed admission of fluid into said first chamber upon completed return movement of said plunger against said first stop.

3,857,247

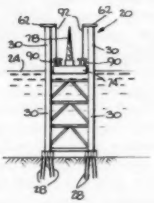
OFFSHORE TOWER ERECTION TECHNIQUE

Lindsey J. Phares, Sugar Lane, Tex., assignor to Raymond International, Inc., Houston, Tex.

Filed Feb. 6, 1974, Ser. No. 440,122

Int. Cl. E02b *17/04*; **E02d** *21/00*

U.S. Cl. 61—46.5 **6 Claims**



1. A method of erecting an offshore tower comprising the steps of positioning a template on a sea bed with the upper end of the template extending above the sea surface, floating a barge out to the template and positioning the barge between the legs of the template, jacking the barge up on the legs of the template and out from the water, driving anchor piles from the barge down through the bottom of the template and into the sea bed to anchor the template in place on the sea bed, thereafter lowering said barge to a floating position, floating said barge away from said template, floating a permanent tower platform to the anchored in place template and jacking the platform up on the template to a raised position above the surface of the sea.

3,857,248

PLATFORM LEVELING DEVICE

Henry A. Rutter, 820 W. 10th, Claremore, Okla. 74017

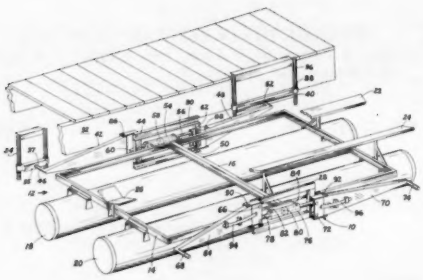
Filed Mar. 8, 1973, Ser. No. 339,277

Int. Cl. B63c *5/00*

U.S. Cl. 61—65 **2 Claims**

1. In combination with a boat hoisting apparatus of the type having a pontoon-supported and vertically movable platform disposed for vertical up and down movement within a boat slip

within a dock structure and wherein the vertical up and down movement is effected by the introduction of air into and the removal of air from, respectively, the pontoon portion of said apparatus, a platform leveling device comprising platform suspension means operably connected between the platform and the dock structure, and leveling means provided on the suspension means and operably connected to the platform for maintaining a constant attitude of the platform during static conditions and during hoisting operations regardless of the load distribution on the platform and regardless of any unevenness of the hoisting by the hoisting means, said platform suspension means comprising a first pair of oppositely disposed lever arm members pivotally connected to the platform about a common transverse axis, one said lever arm member being disposed on each side of the platform, the said first pair of lever arm members being also pivotally secured to the dock structure, a second pair of oppositely disposed lever arm members pivotally secured to each side of the platform about a common transverse axis, said axis being spaced from the axis of the first pair of lever arm members, the said second pair of lever arm members being also pivotally secured to the dock structure, the first pair of lever arm members being pivotally connected to each side of the platform near the center portion thereof and extending forwardly therefrom, the forwardly



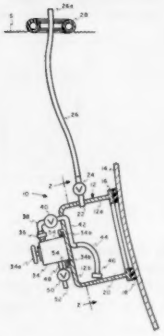
extending ends thereof being pivotally connected to the dock structure and wherein the second pair of lever arm members are pivotally connected to each side of the platform near the rear portion thereof, said second pair of lever arm members extending forwardly from their pivotal connection, the forwardly extending ends thereof being pivotally connected to the dock structure, said leveling means comprising a first pair of longitudinally disposed vertically spaced linkage rods having one end thereof secured between the rear ends of the lever arm members on one side of the platform, said first pair of linkage rods vertically spaced on either side of the axis of rotation of the said lever arm members on one side of the platform, and an oppositely disposed second pair of longitudinally disposed vertically spaced linkage rods being secured between the rear ends of the lever arm members on the opposite side of the platform, said second pair of linkage rods vertically spaced on either side of the axis of rotation of the said lever arm members for providing simultaneous rotation of both lever arm members on one side of the platform and for providing simultaneous rotation of both lever arm members on the opposite side of the platform, said leveling means also comprising rotational transfer means for providing simultaneous rotation of both lever arm members of each pair of lever arm members.

3,857,249

COFFERDAM

Thomas E. Kelly, 20110 S.W. 316th St., Homestead, Fla. 33030, and James K. Shelton, 1915 Monroe Ave., Panama City, Fla. 32401

Filed Mar. 22, 1973, Ser. No. 344,003
Int. Cl. B63c *11/34*
U.S. Cl. 61—68 **3 Claims**



1. A cofferdam device for exluding water from a predetermined area of an underwater surface, said device comprising in combination:

a cup-shaped body having sidewalls and an end wall defining a cavity having one side open;

gasket means, attached to the edges of said side walls, for effecting a sealing engagement of said device to said underwater surface with the latter closing said cavity;

a vent hose having its upper end in open communication with atmospheric pressure above the surface of said water;

a first valve, connected between said hose and said body, said first valve being operative to selectively place said cavity into or out of communication with said atmospheric pressure;

a pump having intake and discharge connections;

lug means for removably securing said pump to said end wall;

a second valve;

union means for separably connecting one side of said second valve to said intake connection of said pump;

a flexible hose disposed into said cavity, said hose having one end connected to said second valve and having its other end free for movement within said cavity; and

a weight attached to said free end of said hose whereby said free end is adapted to be positioned at the lowermost portions of said cavity irrespective of the orientation of said body.

3,857,250

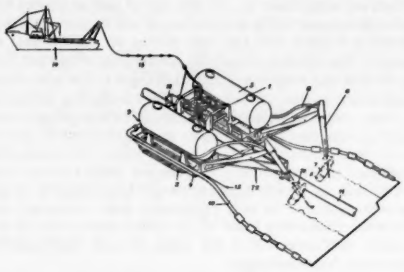
UNDERWATER VEHICLE FOR LAYING UNDERGROUND CABLES AND PIPELINES

Vincenzo Di Tella, Capella di Torre Gaveta, and Adolfo Rodighiero, Venezia, both of Italy, assignors to Tecnomare S.p.A., Venezia, Italy

Filed Apr. 4, 1973, Ser. No. 347,542
Claims priority, application Italy, Apr. 7, 1972, 22855/72
Int. Cl. E02f *5/06*
U.S. Cl. 61—72.4 **6 Claims**

1. A vehicle for underwater entrenching of a pipeline or cable in a sea bed comprising: frame means adapted to be positioned in overlying relationship with said pipeline; drive means on said frame means adapted to propel the vehicle along the sea bed; survey means mounted on said frame means and adapted to be in contact with said pipeline for sensing

deviations of the movement of the vehicle from the path of the pipeline; servo means adapted to receive a signal output from said survey means, said servo means being operatively coupled to said drive means whereby the direction of movement of the



vehicle relative to the pipeline is controlled; and articulated arms mounted at one end to said frame means and having digging tools articulately mounted at the other end thereof, whereby a trench may be dug beneath said pipeline.

3,857,251

LNG STORAGE TANK VAPOR RECOVERY BY NITROGEN CYCLE REFRIGERATION WITH REFRIGERATION MAKE-UP PROVIDED BY SEPARATION OF SAME VAPOR

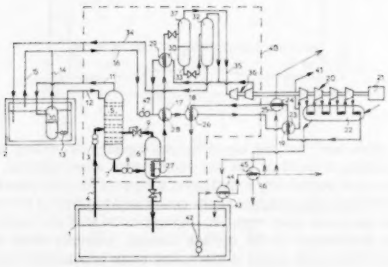
Jean Alleaume, Saint-Cloud, France, assignor to Technigaz, Paris, France

Filed Dec. 18, 1972, Ser. No. 315,931

Claims priority, application France, Dec. 27, 1971, 71.46842

Int. Cl. F25j *3/02*

U.S. Cl. 62—28 **18 Claims**



1. A device for treatment of natural gas stored in liquefied state, comprising: tank means containing said liquefied natural gas and including a stop vapor space filled with the gaseous phase consisting of the vapors resulting from the boil-off of said liquefied-natural-gas; fractional distillating column means comprising 9 bottom collecting sump portion for holding reliquefied-natural-gas, an overhead vapor space collecting top portion for confining separated gaseous nitrogen and intermediate upper and lower portions and a sump portion; first vapor conveying duct means connecting said top vapor space of said tank means to said intermediate lower portion of said fractional distillating column means; first vapor pump means inserted in said first duct means and having its suction side communicating with said top vapor space and its discharge side communicating with said fractional distillating column means; reboiler vessel means including a lower liquid phase holding portion for containing reboiling liquefied-natural-gas and an upper gaseous phase holding portion for confining vapors of liquefied-natural-gas; heat exchange pipe coil means contained within said lower liquid phase holding portion; first liquid-conveying duct means connecting said sump portion of said fractional distillating column means to the inlet of said lower liquid phase holding portion of said reboiler vessel means; first liquid pump means inserted in said second cut means and having its suction side communicating with said sump portion of said fractional distillating column means and its discharge side in communication with said lower liquid phase holding portion of said reboiler vessel means; second liquid-conveying duct means connecting the outlet of said lower liquid phase holding portion of said reboiler vessel means with said top vapor space of said tank means; second vapor-conveying duct means connecting said upper gaseous phase holding portion of said reboiler vessel means to said intermediate lower portion of said fractional distillating column means; container means containing liquid-nitrogen and including a top vapor space filled with the gaseous phase released by the boil-off of said liquid-nitrogen; reflux condenser drum means immersed in said liquid-nitrogen within said container means and including a condensate holding portion containing liquid-nitrogen and a vapor holding portion filled with gaseous nitrogen; third liquid-conveying duct means connecting said condensate holding portion of said reflux condenser drum means to said intermediate upper portion of said fractional distillating column means; second liguid pump means inserted in said third liquid-conveying duct means and having its suction side communicating with said condensate holding portion of said reflux condenser drum means and its discharge side communicating with said intermediate upper portion of said fractional distillating column means; third vapor-conveying duct means connecting said overhead collecting top portion of said fractional distillating column means to the inlet of an immersed portion of said vapor holding portion of said reflux condenser drum means; main gaseous flow heat exchanger means having a refrigerating medium flow lath and a heating medium flow path respectively interconnected in series, said treating medium flow path including pipe coil means interconnected in series within said heating medium flow path of said main heat exchanger means; fourth vapor-conveying duct means connecting the outlet of said top vapor space of said container means to the inlet of said refrigerating medium flow path of said main gaseous flow heat exchanger means; second gas pump means inserted in said fourth vapor-conveying duct means and having its suction side communicating with said top vapor space of said container and its discharge side communicating with said refrigerating medium flow path of said main gaseous flow heat exchanger means; power dirven compressor means with at least one compression stage having an inlet and an outlet connected to the refrigerating medium flow path and to the heating medium flow path, respectively, of said main heat exchanger means; and cold phase separator means including a condensate holding portion for containing liquid-nitrogen and a vapor holding portion for confining non-condensed gaseous nitrogen; fourth liquid-conveying duct means connecting said condensate holding portion of said cold phase separator means into the body of liquid nitrogen contained in said container; an outlet and an inlet of said vapor holding portion of said cold phase separator being connected to the inlet of the refrigerating medium flow path and to the outlet of the heating medium flow path, respectively, of said main heat exchanger means.

3,857,252

FOOD PRODUCT FREEZING APPARATUS

Edward M. Wight, Austin, Tex., assignor to Glacier Industries, Inc., Austin, Tex.

Filed Jan. 17, 1973, Ser. No. 324,432

Int. Cl. F25d *23/02*

U.S. Cl. 62—266 **32 Claims**

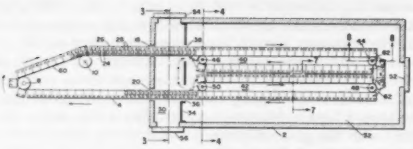
1. A food freezing apparatus comprising:

a vault;

a continuous conveying means for transporting food products into, through and out of said vault, said conveying means traveling primarily in at least one network along substantially parallel planes within said vault;

a refrigeration coil;

means for circulating air in heat exchange with said coil and over said products in a direction substantially parallel to a plane perpendicular to the primary planes of travel of



said conveying means within said vault; and a bulkhead within said vault forming a first and second chamber within said vault, said food products passing into and out of said vault through said first chamber, said second chamber containing said means for circulating air, said coil and said networks, wherein said bulkhead is positioned substantially perpendicular to the primary planes of travel of said conveying means and parallel to said air circulation direction.

3,857,253

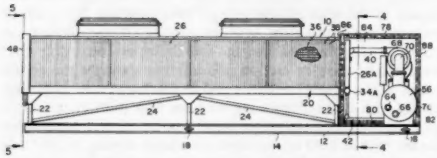
UNITARY AIR COOLED CENTRIFUGAL REFRIGERATION WATER CHILLER

Lee W. Burgett; Chester D. Ware, and Duane F. Sanborn, all of La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Continuation of Ser. No. 292,051, Sept. 25, 1972,. This application Feb. 11, 1974, Ser. No. 441,633

Int. Cl. F25b *39/04*

U.S. Cl. 62—289 **8 Claims**



1. A portable self-contained unitary water chiller machine comprising: an elongated air cooled heat exchanger having a generally U-shaped vertical cross section normal to the longitudinal axis thereof; each of the leg and bottom portions of said U-shaped section including a plurality of parallel spaced horizontally conducting refrigerant tubes extending longitudinally from one end to the other end thereof through a plurality of longitudinally and horizontally spaced heat exchanger fins; an elongated portable subframe disposed beneath said air cooled heat exchanger having a portion extending longitudinally beyond one end of said air cooled heat exchanger; first elongated header means at said one end of said air cooled heat exchanger extending transversely to said portable subframe for conducting refrigerant with respect to one longitudinal end of said tubes; second header means at the other end of said air cooled heat exchanger extending transversely to said portable subframe for conducting condensed refrigerant with respect to the other longitudinal end of said tubes; means for supporting said air cooled heat exchanger in spaced relation above said subframe to provide a space for passing air above said subframe below said bottom portion of said U-shaped section; a plurality of longitudinally spaced fan means disposed above said bottom portion and intermediate said leg portions of said U-shaped section for drawing air through each of said bottom and leg portions; an elongated shell-and-tube refrigerant evaporator heat exchanger disposed entirely at said one end of said air cooled heat exchanger supported transversely on said portion of said elongated portable subframe extending beyond said one end of said air cooled heat exchanger; a centrifugal refrigerant compressor at said one end of said air cooled heat exchanger supported by said portion of said portable subframe extending beyond said one end of said air cooled heat exchanger; first conduit means for conducting refrigerant from the shell of said evaporator heat exchanger to the inlet of said compressor; second conduit means for conducting refrigerant gas from said compressor longitudinally of said portable subframe to said first header means at said one end of said air cooled heat exchanger; third conduit means for conducting condensed refrigerant from said second header at the other end of said air cooled heat exchanger longitudinally of said portable subframe to said evaporator heat exchanger; and means for conducting water to be chilled transversely of said portable subframe within the tubes of said shell-and-tube evaporator heat exchanger.

3,857,254

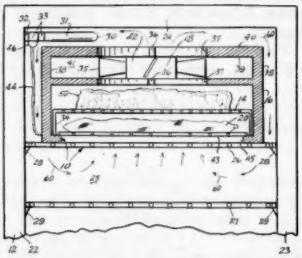
MEAT TREATING APPLIANCE

Stanley Lobel, 1096 Madison Ave., New York, N.Y. 10028

Continuation-in-part of Ser. No. 208,164, Dec. 15, 1971, Pat. No. 3,821,454. This application July 23, 1973, Ser. No. 381,689

Int. Cl. F25d *17/02*

U.S. Cl. 62—373 **1 Claim**



1. Structure for the simultaneous ageing, defrosting and marinating of meat or the like comprising: a refrigerator, an open vessel containing a marinade, a support for said vessel in said refrigerator, and fan means positioned to direct a current of air upon said open vessel to impinge upon said marinade to cause turbulence in the surface thereof, whereby meat disposed within said vessel is marinated at an accelerated rate.

3,857,255

CRYOGENIC CONTROL VALVE

Albert A. Elwood, 301 Broadway, Riviera Beach, and James Patterson, 2195 Ibis Isle Rd., Palm Beach, both of Fla. 33404

Filed Nov. 26, 1971, Ser. No. 168,331

Int. Cl. F25d *3/00*

U.S. Cl. 62—293 **7 Claims**

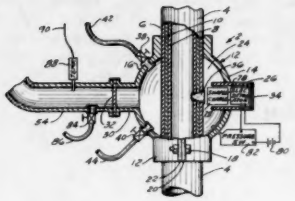
1. A cryogenic valve for regulating the flow of fluid in a conduit by supplying a cryogenic coolant into the conduit to create a gating means including:

a cryogenic coolant source,

a body connectable to the conduit, said body including a cryogenic inlet connected to said coolant source, means for directing the movement of the cryogenic coolant from said coolant source into the body to cool the fluids in the conduit to regulate the conduit fluid flow rate, and

control means connected to said body including means for

opening a passage into the conduit to provide a passageway to allow at least a portion of the cryogenic coolant to



mix with the fluids in the conduit whereby said mixture forms the gating means to regulate the flow of the fluids.

3,857,256

MULTIPLE UNIVERSAL JOINT

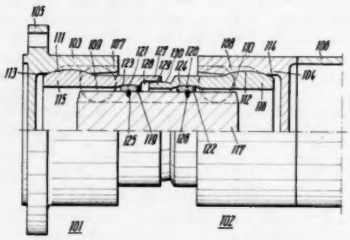
Sobhy Labib Girguis, Troisdorf, Germany, assignor to Uni-Cardan A.G., Lohmar/Rheinl, Postfach, Germany

Filed Feb. 8, 1973, Ser. No. 330,480

Claims priority, application Germany, Feb. 8, 1972, 2205802

Int. Cl. F16d *3/30*

U.S. Cl. 64—21 **14 Claims**



1. In a universal joint, the combination of a plurality of constant velocity universal joints, each constant velocity universal joint comprising an outer joint element and an inner joint element having mutually opposed axially extending grooves, balls in said mutually opposed grooves to transmit torque between the joint elements, a cage between the inner and outer joint elements of each constant velocity universal joint to retain said balls therebetween, one of the corresponding joint elements of the constant velocity universal joints connected to each other, control means for guiding the cages and balls of two adjacent constant velocity universal joints to maintain constant velocity transmission, each of said cages having an axial extension on the end thereof facing the other cage, and means for guiding the mutually facing axial extensions opposite each other such that upon bending of the universal joint the said constant velocity universal joints are bent at angles which are less than the total bending angle and having a predetermined relationship to each other.

3,857,257

COUPLING WITH MECHANICAL OVERLOAD SAFETY DEVICE

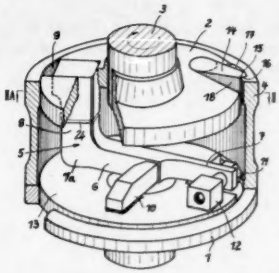
Gerd Steiner, Darmstadt-Arheilgen, and Rainer Kuhnpast, Dusseldorf, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed July 27, 1973, Ser. No. 383,249

Claims priority, application Germany, July 27, 1972, 2236856

Int. Cl. F16d *9/00*

U.S. Cl. 64—28 R **10 Claims**



1. A coupling for transmitting torque between two rotary members, the coupling comprising:-

a driving coupling part;

a driven coupling part;

abutment means on said coupling parts, respective said abutment means engaging and preventing relative rotation between said coupling parts in a direction opposite to that of relative rotation which said torque transmitted by said coupling tends to cause;

at least one coupling member which couples said coupling parts together at at least one position spaced from the axis of said coupling, said coupling member having a zone of reduced strength, which zone fractures when a predetermined overload on said coupling is exceeded, thereby interrupting effective transmission between said coupling parts;

means for subjecting said zone of reduced strength to an additional force when a predetermined load, less than said predetermined overload, on said coupling is exceeded; and

means for pre-stressing said coupling member and thereby applying a pre-stressing torque to both said coupling parts which is substantially equal to said predetermined load and is in a direction urging said abutment means together.

3,857,258

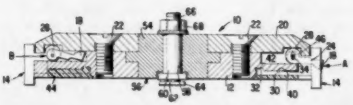
PATTERN WHEEL WITH PIVOTED JACKS SUPPORTED BY INSERTED WALL MEMBERS

Harry Agulnek, and Lester Mishcon, both of Miami Beach, Fla., assignors to The Singer Company, New York, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,630

Int. Cl. D04b *15/76*

U.S. Cl. 66—50 A **2 Claims**



1. A pattern wheel comprising a ring with slots in a peripheral marginal portion thereof; an insert in each slot, the inserts extending beyond the slots and defining walls for the pattern

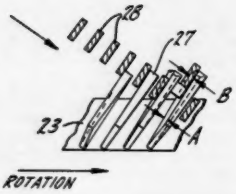
wheels, each insert including a jack supporting arm and an additional arm; a bonding agent solidified in place against each of the additional arms and the ring for securing the inserts to the ring; a plurality of pivotally mounted needle-actuating jacks in said wheel supported by and situated between said walls, the jacks being movable between a needle-actuating and a non-actuating position; and a cover secured to said ring for holding down jacks in the actuating position and extending over jacks in the non-actuating position.

3,857,259

KNITTING MACHINE PATTERN WHEEL

John E. Press, Park Ridge, Ill., assignor to Harig Precision, Inc., Elgin, Ill.

Filed Sept. 10, 1973, Ser. No. 395,829
Int. Cl. D04b *15/76*
U.S. Cl. 66—50 A **4 Claims**



1. In a pattern wheel for use in a knitting machine, the combination of

a wheel disc having integral peripheral teeth formed thereon,

each peripheral wheel disc tooth being disposed at a generally helical angle with respect to the wheel disc and having a configuration generally conforming to the configuration of a helical gear tooth,

said wheel disc being made from a material having the characteristic, with respect to yieldability, of plastic to thereby accommodate misalignment between the pattern wheel and a knitting needle,

a metal jack plate mounted on one side of said wheel disc in flush engagement therewith over at least a portion of its overlapping area,

said metal jack plate having a plurality of jacks thereon disposed between the wheel disc teeth,

each jack plate jack being intetrally formed with the jack plate,

at least that radial portion of each integrally formed jack plate jack which radially overlaps an adjacent wheel disc tooth being angularly disposed so as to closely interfit with flanking wheel disc teeth, and

means for releasably fastening the jack plate to the wheel disc,

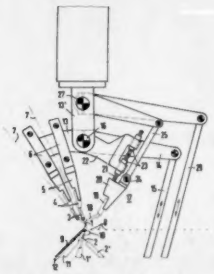
each of said jack plate jacks being severable at an area of weakness located radially inwardly from its extremity a distance sufficient to provide clearance for the butt of a knitting needle.

3,857,260

SINKER ARRANGEMENT FOR WARP KNITTING AND RASCHEL MACHINES

Arno Zwingenberger, Blumenstr. 15, 8671 Marxgrun, Bayern; Roland Wunner, Hauptstrasse 30, 8671 Bernstein/Wald, Bayern, both of Germany; Karl Liebrandt, deceased, late of Griesbacher Weg 3, 8674 Naila, Bayern, Germany (by Sophia Liebrandt, nee Saalfrank, heir and legal representative), and Gunnar Liebrandt, Pitschhausenweg 1a, 8674 Naila, Bayern, Germany (heir and legal representative)

Filed June 5, 1972, Ser. No. 259,785
Int. Cl. D04b *23/12, 15/06*
U.S. Cl. 66—84 **1 Claim**



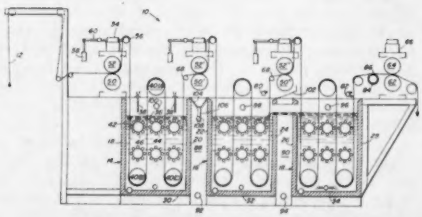
1. A warp knitting or Raschel machine comprising a row of vertical needles, a plurality of vertical needles, a plurality of thread guides for supplying warp thread to said needles, means for feeding weft or filler thread to said needles for producing knitted fabric, said weft or filler thread extending over the entire width of the machine, and means for reciprocating said needles mainly vertically and said thread guides mainly horizontally during a knitting cycle, a sinker arrangement comprising a plurality of sinkers movably mounted above said needles and capable of performing a substantially circular or orbital movement, and means for moving said sinkers horizontally in timed relationship with the movement of said thread guides, and vertically in timed relationship with the movement of said needles, the sinkers thus performing said substantially circular or orbital movement serving to hold said weft or filler thread in place during the rising movement of the needles.

3,857,261

TEXTILE SCOURING RANGE

Harold R. Wilcox, Maynard, Mass. Assignor to Riggs & Lombard, Inc., Lowell, Mass.

Filed Aug. 27, 1973, Ser. No. 391,609
Int. Cl. B05c *3/04, 3/138*
U.S. Cl. 68—22 R **5 Claims**



1. A range for treating a running web with a scouring liquid or the like, comprising

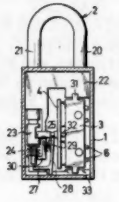
a. a plurality of tanks spaced along the path of travel of said web and adapted to contain a quantity of liquid,

b. an overflow compartment disposed between adjacent tanks to receive excess liquid from said adjacent tanks,
c. drain means connected to each of said compartments for removing liquid from said compartments,
d. valve means connected to said drain means for selectively opening and closing said drain means whereby liquid accummulated in said compartments may overflow into an adjacent tank or into said drain means,
e. a pair of nip rolls mounted above each of said compartments for squeezing liquid from said web passing therebetween,
f. deflecting means disposed below at least one of said pair of nip rolls for selectively directing liquid from said nip rolls into a compartment or into a tank, and,
g. guide means for guiding said web into and out of said tanks and through said pairs of nip rolls.

3,857,262
MAGNETIC LOCKING MECHANISM

Konstantin Sidiropoulos, Liechtensteinerstrasse 4, 6800 Feldkirch, Austria

Filed Feb. 8, 1973, Ser. No. 330,667
Int. Cl. E05b *47/00*
U.S. Cl. 70—276 **10 Claims**

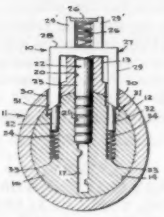


1. A locking mechanism comprising, in combination:
a. a casing;
b. a first locking element fixedly fastened in said casing;
c. a second locking element guided in said casing for movement relative to said first element,
1. one of said elements being formed with a plurality of apertures directed toward the other element;
d. a plurality of elongated pin members of magnetically susceptible material mounted on the other element for movement between respective operative and rest positions,
1. said pin members, when in said operative position, being longitudinally directed toward said apertures and entering respective ones of said apertures when said second element approaches said first element,
2. said pin members, when in said rest positions, being out of alignment with said apertures and limiting movement of said second element toward said first element in a position in which said pin members are outside said apertures;
e. first magnetic means fixedly mounted on said other element and biasing said pin members toward said rest positions thereof;
f. a key carrying a plurality of second magnetic means; and
g. guide means on said casing for guiding said key toward and away from an unlocking position in which said second magnetic means bias said pin members toward the operative positions thereof with a force sufficient to overcome the biasing force of said first magnetic means; and
h. latching means operatively connected to said second locking element for simultaneous movement therewith.

3,857,263
PICK RESISTANT CYLINDER LOCK

Klaus W. Gartner, 363 W. Squire Dr., No. 4, Rochester, N.Y. 14623

Filed Aug. 3, 1973, Ser. No. 385,230
Int. Cl. E05b *15/14, 63/00*
U.S. Cl. 70—364 A **14 Claims**

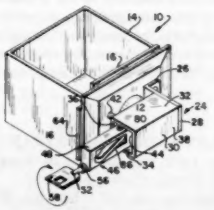


1. A cylinder lock adapted to be unlocked by a key, comprising a lock casing having a forwardly opening, axially elongated cylindrical bore therein a cylindrical key plug rotatably disposed in said bore for rotation about the bore axis having a key slot therein and a cylindrical surface closely conforming to and located immediately adjacent the bounding surface of said bore defining a shear line at the interface therebetween, said lock casing and key plug each having mating bore sections alinable along pin axes intersecting the shear line at the locked position of the plug to form tumbler bores, tumbler pin assemblies in each of said tumbler bores each including a rigid pin locking segment resiliently biased to a normal position extending into both said bore sections crossing said shear line and a plurality of inner pin segments in the plug bore section defining plural planes of separation for each pin assembly spaced radially inwardly of the shear line, and locking members for the respective pin assemblies coupled for reciprocative movement with the associated pin assemblies along paths generally paralleling and laterally spaced from the associated pin axes and each having a rigid elongated locking leg crossing said shear line to block rotary movement of the plug from said locked position, said casing and plug having recesses alinable at the locked position of the plug to receive said legs of said locking members, and said legs having end surfaces positioned to aline with said shear line when the pin assemblies are moved to a release position alining selected planes of separation defined by said pin segments with the shear line to release the plug for rotation to unlocked position.

3,857,264
PROTECTIVE SHIELD FOR COIN BOX LOCKS AND KEY THEREFOR

Lawrence S. Fowler, 135 Kearney, Denver, Colo. 80220

Filed July 5, 1973, Ser. No. 376,729
Int. Cl. E05b *17/14*
U.S. Cl. 70—423 **19 Claims**



1. Anti-probe apparatus for use with a lock of the type actuated by insertion of a key into a keyway followed by rotation thereof which comprises in combination: guard means defining a tunnel having an opening in the side thereof

intermediate its ends sized to provide access to the keyway when attached so as to register therewith and a second opening at one end displaced to one side of said access opening and disposed at right angles thereto; and, lock-actuating means including a housing insertable into said tunnel through the open end thereof, said housing being sized for relative transverse movement therein between a retracted position remote from the access opening in the side thereof and an extended position in close proximity to the latter, a key operative to actuate the lock journalled for rotation in the housing in position to enter the keyway upon relative transverse movement of said housing from its retracted into extended position, right angle drive means within said housing connected to said key and operative upon actuation to rotate same, and actuating means accessible through the open end of the tunnel operatively connected to said drive means.

3,857,265

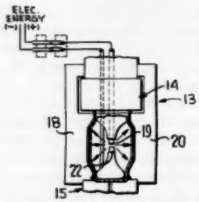
APPARATUS FOR ELECTROHYDRAULICALLY FORMING TUBULAR ELEMENTS

Warren F. Howeler, Oak Lawn; Lubi Radosh, Palos Heights; Donald J. Roth, Chicago Heights; Norbert L. Wright, Park Ridge; John W. Grek, Lisle; Kent B. Godsted, Dolton, all of Ill., and Joseph A. Geuss, Erie, Pa., assignors to Continental Can Company, Inc., New York, N.Y.

Continuation of Ser. No. 749,885, Aug. 2, 1968, abandoned. This application May 12, 1972, Ser. No. 252,829

Int. Cl. B21d *26/12*

U.S. Cl. 72—56 **7 Claims**



1. Apparatus for reforming tubular elements comprising means for conveying tubular elements between loading and discharging stations, mold means carried by said conveying means for receiving the tubular elements in cavities of said mold means, flexible chamber means internally of each mold means and in telescopic relationship to the tubular element therein, means for periodically conducting a fluid medium into said chamber means, means for generating an electrical discharge in said chamber means whereby each tubular element is reformed by the fluid medium to the configuration of the cavities, means for opening each mold means for the removal of each reformed tubular element therefrom, means surrounding said chamber means for clamping a peripheral edge of each tubular element against cooperating clamping surface means of each mold means, means for increasing the pressure of the fluid medium in the chamber means prior to the operation of said generating means, and means for increasing the clamping force between said clamping means and said clamping surface means depending upon the increase of pressure of the fluid medium in the chamber means.

3,857,266

ROTARY ARBOR WIRE STRAIGHTENER

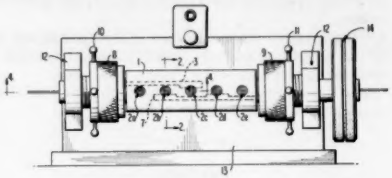
David J. Wilke, York, Pa., assignor to Handy & Harman Specialty Metals Group, Cockeysville, Md.

Filed Aug. 24, 1973, Ser. No. 391,497

Int. Cl. B21f *1/04*

U.S. Cl. 72—79 **4 Claims**

1. A rotary arbor wire straightener comprising stationary frame means, an arbor rotatably mounted on said frame means, adjustable die means mounted within said arbor and rotatable therewith, rack means slidably mounted in said arbor, pinion means connected to said die means, one end of said rack means engaging said pinion means, a collar thread-



ably mounted on said frame means, and bearing means connected between said collar and the opposite end of said rack means, whereby the die means is adjustable relative to said arbor during the operational rotation of said arbor.

3,857,267

PROCESS AND INSTALLATION FOR PRODUCING METAL TUBES WITHOUT WELDING

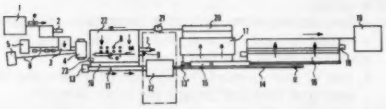
Jean Paul Lemaire, Saint Saulve, and Philippe Malicet, Valenciennes, both of France, assignors to Vallourec Usines a Tubes de Lorraine-Escaut et Vallourec Reunies, Paris, France

Filed Sept. 5, 1973, Ser. No. 394,603

Claims priority, application France, Sept. 8, 1972, 72.31888

Int. Cl. B21b *23/00*

U.S. Cl. 72—209 **6 Claims**



1. A process for producing metal tubes without welding, comprising the steps of:

a. boring a solid bar with a mandrel, to produce a tube blank surrounding the mandrel.

b. introducing the combined blank and mandrel into a continuous mill,

c. moving the mandrel within the mill at a speed such that during the rolling operation the available length of the mandrel is at least equal to the length required for the rolling operation, but such that upon completion of the rolling operation only a small fraction of the rolled blank has the mandrel within it,

d. releasing the mandrel after rolling of the blank has been completed so that the mandrel discontinues its movement through the mill,

e. removing the mandrel from the rolled blank,

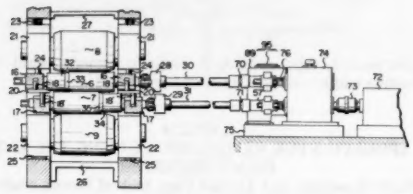
f. subjecting the rolled blank to further processing, and

g. cooling, inspecting, and lubricating the mandrel and returning it to its orginal position for boring another solid bar.

3,857,268
ROLLING MILL AND ROLLING METHOD

Toshiyuki Kajiwaka, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 6, 1972, Ser. No. 312,784
Claims priority, application Japan, Dec. 10, 1971, 46-99450
Int. Cl. B21b *31/18*
U.S. Cl. 72—247 15 Claims

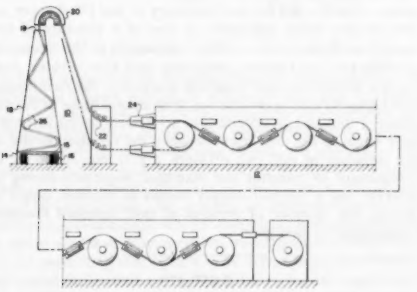


1. A rolling mill comprising: a pair of upper and lower working rolls each contacting a material being rolled, a pair of back up rolls backing up said working rolls, one of said back up rolls being positioned on said upper working roll and the other of said back up rolls being positioned under said lower working roll, said working rolls and said back up rolls being arranged in a vertical plane, means for shifting said upper working roll in the axial direction to locate one terminal end of the working surface of said upper working roll between the adjacent end of the associated back up roll and the adjacent edge of the material being rolled, and means for shifting said lower working roll in the axial direction to locate the terminal end of the working surface of said lower working roll which is opposite to said terminl end of the upper working roll between the adjacent end of the associated back up roll and the adjacent edge of said material being rolled, whereby the flatness of the rolled material is controlled.

3,857,269
NON-ROTATABLE TUBE PAY-OFF APPARATUS

Guy E. Martin, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 219,641, Jan. 21, 1972, Pat. No. 3,765,215. This application Apr. 30, 1973, Ser. No. 355,886
Int. Cl. B21c *1/04*
U.S. Cl. 72—287 8 Claims



1. The method of paying off coiled tubing in a low inertia manner from a non-rotatable supply of said tubing, the method comprising the steps of

providing a hollow, elongated structure having a cross sectional area that gradually decreases in a direction away from the supply of tubing to an opening of a predetermined minimum area remote from the supply, and length and breadth sufficient to allow coiled loops of said tubing being pulled therethrough to attain a relatively straight configuration near the end of their travel through said structure,

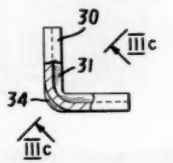
serially pulling coiled loops of tubing from the supply thereof into and through said hollow structure, the coils of said tubing traveling through said elongated structure in gradually decreasing diameters towards said minimum opening, and

directing the tubing from said elongated structure in a manner that allows the tube to assume a change in direction.

3,857,270
METHOD OF SHAPING SHEET MATERIAL

Clemens A. Iten, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 412,864
Int. Cl. B21d *5/00*
U.S. Cl. 72—324 7 Claims

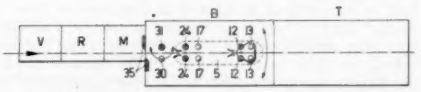


1. A method of shaping sheet material comprising relieving the material at an area at one side of the sheet, and bending the sheet about an axis through said area with the area on the inside of the bend, thereby drawing in the sheet material at the apex of the angle formed by the bend.

3,857,271
BENDING MACHINE FOR ROD OR STRIP MATERIAL

Hans Gott; Klaus Ritter; Josef Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwicklungs-und Verwertungs-Gesellschaft m.b.H., Graz, Austria

Filed May 2, 1973, Ser. No. 356,383
Claims priority, application Austria, May 2, 1972, 3792/72
Int. Cl. B21d *5/02*
U.S. Cl. 72—383 6 Claims



1. A bending machine for rod or strip material, such as reinforcing pieces for concrete, said machine comprising feed means for feeding into a feed path material to be bent, a first bending head defining an axis of bend mounted at a fixed position along said path, a second bending head mounted downstream of said first bending head, first movement means adjustably separating said first and and said second bending heads, each of said bending heads comprising a pair of movable bending tools and a pair of fixed bending mandrels forming guides for said material, said pairs of of movable bending tools being actuated in opposite directions, pivot means pivotally mounting said second bending head about the axis of bend of said first bending head out of said path, said pivot means being coupled to said first bending head, whereby said first and said second bending heads simultaneously bend said material in a plane in opposite senses to substantially the same extent, and second movement means for moving said second bending head and at least one of said bending tools of said first bending head out of the plane of bend of said material.

3,857,272

COUNTERSTROKE HAMMER

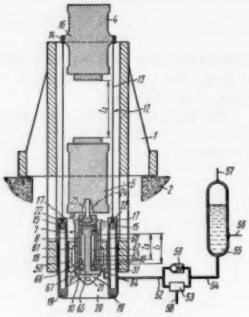
Bogdan Vyacheslavovich Voitsekhovsky, ulitsa Akademicheskaya, kottedzh, 2; Valentin Pavlovich Nikolaev, ulitsa Maltseva 1, kv. 8, and Grigory Yankelevich Shoikhet, ulitsa Pravdy, 1, kv. 34, all of Novosibirsk, U.S.S.R.

Filed June 13, 1973, Ser. No. 369,549

Claims priority, application U.S.S.R., June 13, 1972, 796429; Aug. 26, 1971, 687061

Int. Cl. B21j *9/12*

U.S. Cl. 72—407 **12 Claims**



1. A counterstroke hammer comprising: a frame; two rams moving towards each other from their initial positions until they come into interaction in a zone for processing a workpiece and return to their initial positions; guides secured to the frame along which movements of the rams are effected; an acceleration drive for the rams made as a pair of reciprocatingly moving parts, cylinder-plunger, which move relative to the frame and both rams in the direction that the latter move during acceleration, the value of mutual relative displacement of both parts of the drive being less than the total distance travelled by said rams from their said initial positions until they come into interaction; tie-rods intended to ensure simultaneous interaction with one of said rams and one of said moving parts of the drive in order to impart an acceleration force to said ram and further disconnect the ram-drive moving part system to ensure movement of the ram free from the drive action following the acceleration; the other moving part of the drive being adapted to contact the other said ram for transmitting an acceleration force and is disconnected from said contact after the ram is accelerated to perform a movement free from the action of the drive, resulting in that the impact interaction of the rams is effected with the disconnected drive, the kinetic energy obtained during their acceleration being damped, while the kinetic energy of both parts of the drive being damped during their interaction independently of the rams.

3,857,273

TOOTHED FORMING TOOL

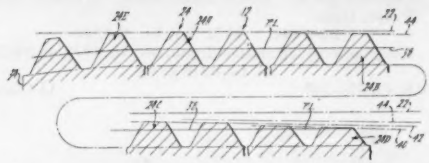
Robert L. Miller, Warren, and Louis M. Fisset, Roseville, both of Mich., assignors to Ex-Cell-O Corporation, Highland Park, Mich.

Filed June 22, 1973, Ser. No. 372,683

Int. Cl. B21d *5/02*

U.S. Cl. 72—469 **11 Claims**

1. A tool for pressure forming teeth on the periphery of a cylindrical workpiece, said tool including a body having a leading end and a trailing end and being provided with a working face having a plurality of teeth thereon, a first section of said teeth being disposed between said leading end and said trailing end, each of said teeth in said first section having a configuration conjugate to the configuration of the teeth to be formed on the workpiece and having a pitch line, second, third and fourth sections of teeth being disposed between said first section of teeth and said leading end, the tops of the teeth in



said second, third and fourth sections sloping toward said leading end at successively increasing angles.

3,857,274

APPARATUS FOR RAPIDLY EVALUATING THE RATE OF A TIMEKEEPER

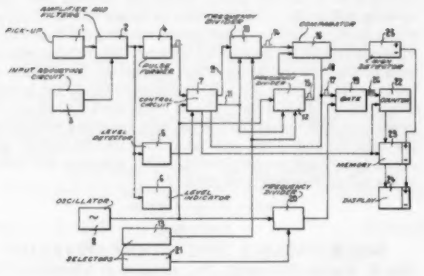
Pierre Desarzens, and Jacques Vogt, both of Bienne, Switzerland, assignors to Omega Louis Brandt & Trere S.A., Berne, Canada

Filed Aug. 10, 1971, Ser. No. 170,523

Claims priority, application Switzerland, Sept. 15, 1970, 13662/70

Int. Cl. G04d *7/12*

U.S. Cl. 73—6 **8 Claims**



1. Measuring apparatus for measurment of the instantaneous rate of a time-keeper, comprising a pick-up for detecting the beats of said timekeeper, a standard oscillator, and means for counting a number of periods of said standard oscillator during an interval of time depending upon the instantaneous rate of said timekeeper, wherein said means comprises a first divider for the frequency of said timekeeper, said first divider being adjustable to any of a plurality of timekeeper oscillation rates, a filter regulatable to the frequencies of different timekeepers preceding said first divider, and a second divider for said standard frequency, the two frequencies being divided to produce each an output pulse of the same nominal duration, a comparator to determine an interval fo time equal to the difference between the duration of the output impulses of said two dividers, a gate controlled by said comparator to transmit said standard frequency during said interval and a counter-display means to receive, count and display the number of periods of said standard frequency transmitted by said gate.

3,857,275

SHOCK ABSORBER TESTING MACHINE

Homer S. Youngs, 8718 Dunaway Dr., La Jolla, Calif. 92037

Filed Dec. 4, 1972, Ser. No. 312,054

Int. Cl. G01m *17/04*

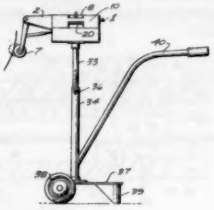
U.S. Cl. 73—11 **6 Claims**

1. A vehicle shock absorber testing machine, comprising:

a. a movable supporting structure including a yieldable member movable in an essentially horizontal direction,

the yieldable member terminating in an indicator wheel;

b. the supporting structure being manually movable into a position adjacent a side of a vehicle having shock absorbers to be tested until the indicator wheel is in bearing contact with the vehicle side, for rolling movement when the vehicle side is depressed, and then permitted to rebound;



c. a recording means carried by the supporting structure and including a movable stylus;

d. and a drive means interconnecting the wheel and stylus to cause recording movement when the wheel rotates in response to depression and rebound of the vehicle side.

3,857,276

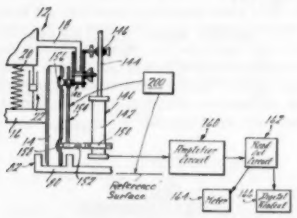
SHOCK ABSORBER TESTING APPARATUS

John H. Fader; Johan H. Keijzer, both of Hasselt, and Reinhart A. Versehoore, Wondelgem, all of Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium

Continuation of Ser. No. 20,932, March 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 876,546, Nov. 13, 1969, abandoned. This application Dec. 8, 1972, Ser. No. 313,459

Int. Cl. G01m *17/04*

U.S. Cl. 73—11 **17 Claims**



1. In an apparatus for testing vehicular shock absorbers in situ upon a braked, parked or otherwise relatively stationary vehicle having a sprung portion supported by associated suspension springs from an unsprung portion with the unsprung portion including road contacting wheels, the apparatus comprising: a support structure adapted to be fixedly mounted relative to a reference surface; an elevatable platform supported by said structure for upward and downward movement relative to said structure and for supporting one road contacting wheel of said vehicle; ramp means supported by said structure for permitting said vehicle to be driven to a point wherein said wheel is located on said platform; means operatively connected between said platform and said support structure for elevating said platform and thereby raising said wheel and that portion of the vehicle supported thereon from a relatively non-elevated position to a relatively elevated position and simultaneously compressing the suspension spring associated with said wheel; means for permitting said platform and said elevated portions of the vehicle to fall from said elevated position to said non-elevated position whereby said elevated wheel will be ejected downwardly under the influence of the compressed spring, means for sensing the rate of movement of one of the vehicle portions with respect to said reference surface during the fall thereof for determining the operational characteristics of the associated shock absorber; and resilient means located below said platform for cushioning said fall.

3,857,277

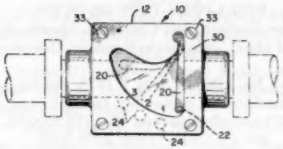
FLOW INDICATOR

Edward H. Moore, Avon, Conn., assignor to DeLaval Turbine, Inc., Princeton, N.J.

Filed Dec. 29, 1972, Ser. No. 319,662

Int. Cl. G01f *1/06*

U.S. Cl. 73—28 **9 Claims**



1. A flow indicator comprising a housing having a chamber and including fluid inlet and outlet openings respectively communicating with opposite ends of said chamber, a flexible flap, means supporting said flap within said chamber at the inlet end thereof to depend from the upper wall of said chamber for hinged flexure about generally parallel axes and generally toward said outlet opening in response to fluid flow through said housing from said inlet to said outlet opening, said flap under condition of no flow from said inlet to said outlet opening providing a closure for said inlet opening to prevent fluid flow through said housing from said outlet opening to and through said inlet opening, said upper wall curving arcuately downwardly from said flap supporting means and generally toward said outlet opening and comprising means for changing the axis of hinged flexure of said flexible flap in response to change in the rate of fluid flow through said chamber from said inlet to said outlet opening, a magnet carried by said flexible flap, and at least one magnetically responsive switch supported by said housing and adapted for connection in an external circuit, said one switch being within the magnetic influence of said magnet during a portion of the flexure of said flap toward said outlet opening.

3,857,278

METHOD AND APPARATUS FOR LEAK TESTING SEALED CONTAINERS

Anthony Jenkins, and Colin Jeffrey Vincett, both c/o Analytical Instruments Ltd., Green Lane, Fowlmere, Royston, Hertfordshire, England

Filed Jan. 29, 1973, Ser. No. 327,823

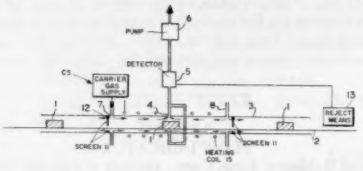
Claims priority, application Great Britain, Feb. 1, 1972, 4585/72

Int. Cl. G01m *3/04*

U.S. Cl. 73—40.7 **16 Claims**

1. A method of leak testing sealed containers comprising establishing an atmosphere of a carrier gas within an intermediate portion of an open ended, elongate chamber remote from both open chamber ends, passing a succession of said

containers through the length of the chamber, and introducing carrier gas together with any gaseous leakage from each container as it passes through said intermediate portion from said intermediate portion into a detector sensitive to the leakage.



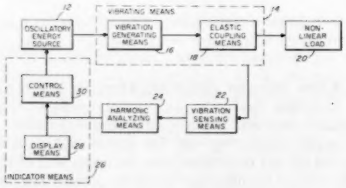
3,857,279
MONITORING AND CONTROL MEANS FOR EVALUATING THE PERFORMANCE OF VIBRATORY-TYPE DEVICES

Thomas Salzer, Bedford, and Charles T. Martin, Jr., Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 358,215, May 7, 1973, Pat. No. 3,794,236, which is a continuation of Ser. No. 168,231, Aug. 2, 1971, abandoned. This application Nov. 12, 1973, Ser. No. 415,064

Int. Cl. G01h *13/00;* **B23k** *5/20*

U.S. Cl. 73—67.2 **8 Claims**



1. In combination:

a source of oscillatory energy;

vibrating means operatively connected to said source and disposed to vibrate at a predetermined excitation frequency;

the vibrating means including vibration generating means for converting oscillatory energy from said source into vibration of the vibrating means at said predetermined excitation frequency, and coupling means for connecting the vibrating means to a non-linear load;

vibration sensing means operatively connected to the vibrating means and disposed to detect harmonic vibrational modes of the vibrating means;

harmonic analyzing means operatively connected to the vibration sensing means; and

indicator means operatively connected to the harmonic analyzing means.

3,857,280
EXTENSIOMETRIC TORQUE METER FOR MEASURING SMALL TORQUES

Cesare Panzeri, Macherio, Italy, assignor to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed June 18, 1973, Ser. No. 371,020

Claims priority, application Italy, June 22, 1972, 69018/72

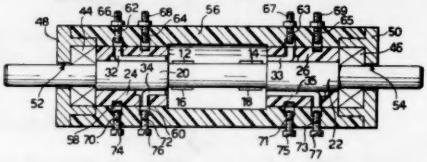
Int. Cl. G01l *3/10*

U.S. Cl. 73—136 A **12 Claims**

1. An extensometric torque meter for measuring small torques, comprising a rotatable shaft which in use of the meter is subjected to the torque to be measured, four extensometric elements attached in symmetrical positions to the surface of the shaft, and electrical connection means for connecting the extensometric elements to an external bridge measuring circuit, said connection means comprising:

a. two electrically insulating sleeves attached to said shaft on opposite sides of said extensometric elements;

b. two contact rings embedded in the external surface of each of said sleeves, each said contact rings having an outside annular contact surface which is flush with the outside surface of the respective sleeve, each of said rings being connected to a respective one of said extensometric elements;



c. a tubular insulating stator surroundingg said sleeves with a sliding fit, said stator being provided with four annular grooves on its internal surface opposite to said contact rings, each of said grooves being filled with mercury, and

d. conductor means extending through the wall of said stator and into respective annular grooves, said conductor means being connectible to said external measuring circuit.

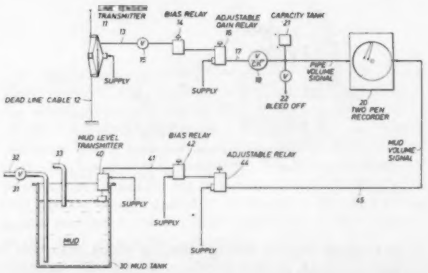
3,857,281
METHOD AND APPARATUS FOR DETECTING POTENTIALLY DANGEROUS CONDITIONS IN A WELL BORE DURING TRIPS OF THE WELL STRING IN AND OUT OF THE WELL BORE

Ethell J. Dower, Houston, Tex., assignor to Warren Automatic Tool Company, Houston, Tex.

Filed Mar. 22, 1973, Ser. No. 343,787

Int. Cl. E21b *47/10*

U.S. Cl. 73—155 **10 Claims**



1. In a method of detecting potentially dangerous conditions in a well bore which is being drilled by the use of a drill string suspended in said well bore and with a drilling mud system, which method is arranged for detecting losses of drilling mud to the well bore formation and the incursion of fluid into the well bore from the formation during times when the drill string is being run into and taken out of the well bore, the combination of steps comprising:

sensing the weight of the drill string suspended in said well bore during said running in and coming out as an indication of the volume of space in said well bore occupied by said drill string;

generating a first signal representative of said suspended drill string volume;

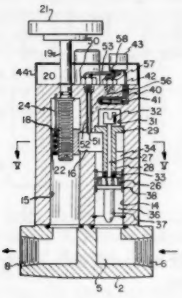
sensing the volume of drilling mud in said drilling mud system outside of said well bore during said running in and coming out operations;

generating a second signal representative of said mud volume outside said well bore;
and monitoring variations in the difference between said first and second signals as indications of loss of drilling mud to the formation and the incursion of fluid from the formation.

3,857,282
PORTABLE TESTER FOR HYDRAULIC POWER CIRCUITS

Richard B. Doorley, Pittsburgh, and Emeric Gaslevic, Glenshaw, both of Pa., assignors to Trace, Inc., Pittsburgh, Pa.

Filed Apr. 30, 1973, Ser. No. 355,559
Int. Cl. G01f *1/06*
U.S. Cl. 73—168 **7 Claims**

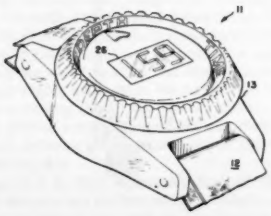


1. A hydraulic circuit tester comprising a housing provided with a mounting surface at one end and with a pair of bores extending inwardly beside each other from said surface to provide at said end an inlet port and an outlet port to register with side-by-side outlet and inlet ports in a fluid line, the inner end portions of the two bores communicating with each other, a valve member in the bore with said outlet port for throttling fluid flow therethrough, means for adjusting said valve member in said bore, electric signal emitting means associated with the other bore and responsive to fluid flowing through the housing, and means for electrically connecting said signal emitting means to means for indicating the flow rate of said fluid.

3,857,283
DEPTHOMETER

Kirk E. Jennings, Kaneohi, and Ronald L. Seiple, Kailua, both of Hawaii, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 12, 1973, Ser. No. 424,149
Int. Cl. G01f *23/18*
U.S. Cl. 73—300 **13 Claims**

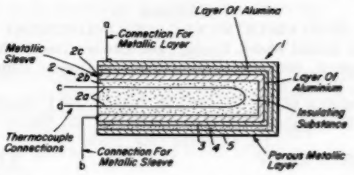


1. A diver-worn depthometer comprising:
a case configured to have a sealable compartment therein having one wall which is shaped to be flexed by a predetermined external water pressure;
attaching means connected to said case for securing said case to the person of a user;
an electromechanical strain transducer attached to said one all so as to provide an electrical analog signal of the pressure-caused flexure of said one wall;
circuit means positioned within the sealable compartment of said case and electrically connected to said electromechanical transducer for converting the electrical analog signal to an electrical, readout signal representative of the depth of water necessary to produce the measured flexure; and
electrooptical means electrically connected to said circuit means for converting the electrical, readout signal to a visual signal, whereby the diver wearing the depthometer may determine his operating depth.

3,857,284
DEVICE AND METHOD FOR MEASURING THE WATER-VAPOR CONTENT OF A LIQUID OR GASEOUS MEDIUM

Georges Carron; Gaetan Pleyber, and Jean-Louis Violet, all of Grenoble, France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed June 21, 1972, Ser. No. 264,707
Claims priority, application France, June 21, 1971, 71.22451
Int. Cl. G01n *25/66*
U.S. Cl. 73—336.5 **13 Claims**



1. A device for measuring the water-vapor content of a liquid or gaseous medium, wherein said device includes at least a hygrometer probe of the type which is based on the principle of adsorption of water-vapor on a film-layer of porous alumina, said probe comprising a thermocouple assembly including a thermocouple arranged within a metallic sleeve member and insulated therefrom, a coating around said thermocouple assembly and comprising successively formed layers including a layer of aluminum covering said metallic sleeve, a layer of alumina covering said aluminum layer and an outer porous metallic layer covering said alumina layer, said layers being bonded to each other and said aluminum layer being bonded to said metallic sleeve, and connections for measuring means being provided at least at predetermined points at each of said thermocouple, metallic sleeve and metallic layer.

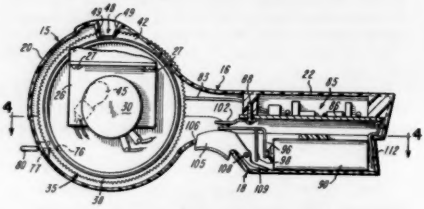
3,857,285
ELECTRONIC THERMOMETER

Stuart E. Athey, 1914 Westwood; Robert R. C. Buchan, 404 S. Plum St., and Glenn M. Nally, 923 Maplecrest, all of Troy, Ohio 45373

Filed Sept. 14, 1972, Ser. No. 289,124
Int. Cl. G01k *7/24*
U.S. Cl. 73—362 AR **12 Claims**

1. An electronic thermometer comprising a housing, a variable resistor disposed within said housing, means for varying the resistance of said resistor, a temperature sensing probe adapted to change resistance in response to changes in tem-

perature a digital temperature indicating scale calibrated according to a range of temperatures adapted to be sensed by said probe, said scale being movable in response to varying said resistor, a light source within said housing and positioned to illuminate at least a portion of said scale, an electrical power supply within said housing, a plurality of operational amplifiers within said housing, circuit means connecting said operational amplifiers, said variable resistor, said light source and said probe to said power supply, said circuit means being



effective to actuate said light source when said scale indicates the temperature being sensed by said probe in response to varying said resistor, a cord reel supported for rotation within said housing, said circuit means includes an elongated flexible conductor wound on said reel and connected to said temperature sensing probe, a portion of said conductor being arranged to twist relative to the axis of said reel in response to extension and retraction of said conductor and probe, and spring means for urging said reel in a direction to retract said conductor.

3,857,286

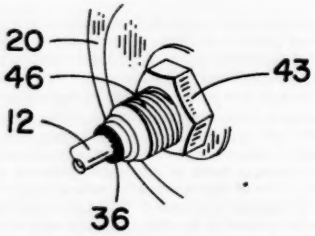
ZERO ADJUSTMENT GAUGE INSTRUMENT

Robert Donald Bissell, Orange, and Edward Joseph Plavcan, Stratford, both of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 190,026, Oct. 18, 1971, abandoned. This application Sept. 19, 1973, Ser. No. 398,717

Int. Cl. G01k *5/64, 15/00*

U.S. Cl. 73—363.9 **5 Claims**



1. In a gauge instrument including a casing of assembled axially contiguous first and second coaxial components in which the first of said components comprises a cup-like case containing calibrated indicia of condition values and the second of said components comprises a relatively rotatable tubular stem containing a condition responsive means operably cooperative with said indicia for visual indication of condition values being measured and means forming an interlock against axial self disassembly of said components, the improvement for zero adjustment comprising mounting means securing said casing components for coaxial angular displacement therebetween, said mounting means consisting essentially of an annular sheet metal sleeve of diameter larger than said stem coaxially secured permanently thereon for relative rotation therewith and terminating in an annular flange enlargement extending predominantly in a radial direction, said sleeve being secured with the contiguous peripheral face surface of its flange in axially forced engagement against an external facing surface of said case axially deflecting said flange enlargement for said engaging surfaces to provide a predetermined frictional restraint against said angular displacement.

3,857,287

PRESSURE TRANSDUCERS

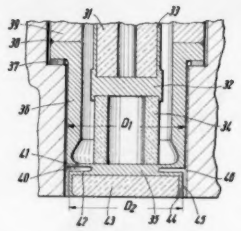
Hans Conrad Sonderegger, Neftenbach; Paul Engeler, Ober-Ohringen, and Eugen Lutz Jun, Winterthur, all of Switzerland, assignors to Kistler Instrumente AG, WInterthur, Switzerland

Filed Apr. 27, 1973, Ser. No. 355,096

Claims priority, application Switzerland, May 8, 1972, 6820/72

Int. Cl. G01i *7/08, 9/08*

U.S. Cl. 73—395 **12 Claims**



1. A transducer for measuring pressures during combustion processes comprising:

a housing;

a tubular body fitted to said housing;

a measuring element disposed within said tubular body;

a disc-shaped diaphragm fitted to said measuring element under a preload, said diaphragm having an outer flexible diaphragm portion and a cylindrically-shaped flexible holder portion, for retaining a heat protective disc, separated from said flexible diaphragm portion by a radial recess which extends approximately to at least half the diameter of said disc-shaped diaphragm, and wherein the outer diameter of said cylindrically-shaped flexible holder is less than the diameter of said tubular body.

3,857,288

MANOMETER WITH SAFETY DEVICE

Gerhard Neugebauer, Trennfurt, Germany, assignor to Alexander Wiegand Armaturen- und Manometerfabrik, Klingenberg, Germany

Filed Dec. 13, 1972, Ser. No. 314,745

Claims priority, application Germany, May 25, 1972, 7219617

Int. Cl. G01i *7/04*

U.S. Cl. 73—416 **7 Claims**

1. A pressure gauge and safety device in combination comprising:

a. a pressure gauge having a rupturable pressure measuring means;
b. a connector adapter to be coupled to said pressure gauge, said connector including a pressure conduit arranged to apply fluid under pressure to said pressure measuring means of said pressure gauge;
c. a branch conduit leading from said pressure conduit;
d. A closure member defined by a diaphragm having at least one line of weakness extending in a direction over the surface thereof for separating said branch conduit from the external atmosphere, said closure member being arranged to rupture before said pressure measuring means ruptures when the fluid pressure in said branch conduit exceeds a predetermined level, the material of said closure member being the same as that of the pressure measuring means in the pressure gauge whereby said closure member is subjected to corrosion at the same rate as the pressure measuring means; and
e. a support secured in the outer end of said branch conduit for carrying said diaphragm whereby when said diaphragm ruptured all of said diaphragm will be retained in said support while providing fluid communication between said pressure conduit, said branch conduit and the external atmosphere.--

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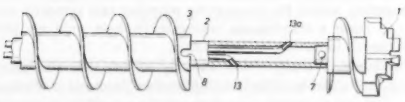
3,857,289

SOIL SAMPLING AUGER

Harold L. Wise; Harry H. Pearce; Milton H. Schreider, and Arley Walters, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 22, 1973, Ser. No. 390,646
Int. Cl. G01n *1/22*
U.S. Cl. 73—421.5 R **7 Claims**



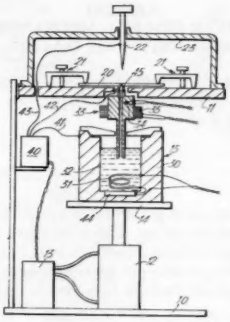
1. A soil sampling process comprising:
penetrating the soil being sampled by drilling-in an auger having bit teeth and cuttings-transporting flightings arranged to form a substantially cylindrical borehole while avoiding any significant soil regrinding or compacting;
terminating the auger rotation and moving at least some of the auger flights away from the bottom of the borehole without removing them from the borehole;
opening a pair of conduits into fluid communication with the space between the so-moved auger flights and borehole bottom; and
circulating fluid to flow repeatedly through the conduits, through the exposed portion of the borehole and through a measuring device, in order to entrain and measure at least one component of the fluid in the soil being sampled.

3,857,290

SOLDERABILITY TESTING

John Stuart Aitken, Windyshields; Bernard Leslie Green, Cleghorn, and William Alexander Cormie, Strathaven, all of England, assignors to Honeywell Information Systems Limited, Brentford, Middlesex, England

Filed Nov. 30, 1973, Ser. No. 420,476
Claims priority, application Great Britain, Dec. 2, 1972, 55755/72
Int. Cl. G01n *13/00*
U.S. Cl. 73—432 R **4 Claims**



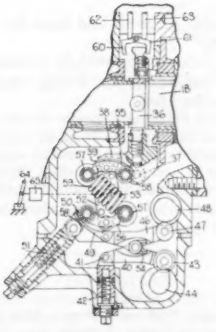
1. A method of testing the solderability of a through plated hole in a printed circuit board comprising applying solder to one end of the hole and measuring the time taken for the solder to travel through the hole to the other end.

3,857,291

SPEED RESPONSIVE GOVERNOR MECHANISMS

Joseph Louis Bloom, Droitwich, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

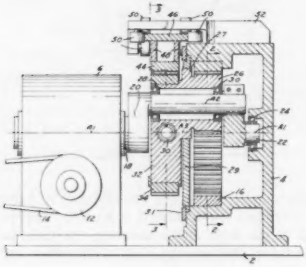
Filed Aug. 4, 1972, Ser. No. 278,011
Claims priority, application Great Britain, Aug. 4, 1971, 36625/71
Int. Cl. G05d *13/26*
U.S. Cl. 73—541 **4 Claims**



1. A speed-responsive governor mechansim comprising a body, a governor arrangement rotatable within the body and including an output member a first lever pivotally mounted on the body and movable by the output member in response to changes in the speed of a shaft which provides a drive for the governor arrangment, said first lever having thereon a cam surface, a second lever having a cam surface spaced from, and directed towards, the cam surface on the first lever, means for varying the position of the second lever to move the cam

surface thereon relative to the cam surface on the first lever, a member angularly movable with respect to the pivotal axis of the first lever, third and fourth levers pivotally mounted on the said member, a tension spring engaging one end of each of said third and fourth levers, the other ends of said third and fourther levers being biased by said spring towards the cam surfaces of said first and second levers respectively to urge the latter apart, movement of said angularly movable member varying the moment of the force of the spring on the first lever.

3,857,292
LINEAR INDEXING MECHANISM
John Henry Brems, 32867 White Oaks Trl., Birmingham, Mich. 48010
Filed Apr. 30, 1973, Ser. No. 355,700
Int. Cl. F16h *37/12*
U.S. Cl. 74—52 **11 Claims**



1. A mechanism for generating a substantially cycloidal output movement comprising:

a. a support frame,

b. an input shaft, to be driven by a prime mover, mounted on said frame to rotate about a fixed first axis,

c. an eccentric shaft having a second axis parallel to said first axis,

d. a first means mounting said eccentric shaft to revolve about said first axis in response to rotation of said input shaft,

e. an output member guided in said frame for motion in a prescribed path,

f. a first rotary member eccentrically journaled on said eccentric shaft and in tangential driving engagement with said output member, and

g. a second means to cause rotation of said first rotary member on said eccentric shaft at an angular velocity substantially equal to but in a direction opposite to the angular velocity of said eccentric shaft about said input shaft, whereby the motion of the output member varies in a cycloidal manner relative to the acceleration and velocity of the input member.

3,857,293
TIMER
George A. Godwin, and William E. Wagle, both of Bloomington, Ind., assignors to Sarkes Tarzian, Inc., Bloomington, Ind.
Filed Feb. 7, 1974, Ser. No. 440,595
Int. Cl. F16h *27/04*
U.S. Cl. 74—118 **4 Claims**

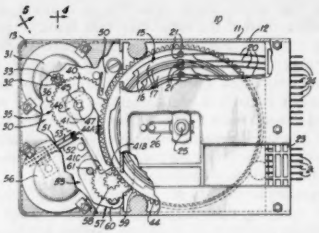
1. A multispeed drive mechanism for a timing device and the like comprising:

a control cam for connection to a timer shaft;

a first ratchet track in the periphery of said control cam having ratchet teeth for slow speed roation of said control cam;

a second ratchet track in the periphery of said control cam being segmented to provide ratchet teeth and smooth areas and having a pitch of a multiple of the pitch of the first set of ratchet teeth;

first and second pawls operatively associated respectively with said first and second sets of ratchet teeth;and



pawl drive means operatively associated with the first and second pawls to advance and retract said pawls synchronously, each through a stroke a distance equal the pitch of its associated ratchet teeth.

3,857,294
ADJUSTABLE LENGTH ENDLESS TRANSMISSION BELT
Robert F. Edouart, P.O. Box 1, Malibu, Calif. 90265
Filed Oct. 5, 1972, Ser. No. 295,139
Int. Cl. F16g *5/00*
U.S. Cl. 74—231 J **12 Claims**

1. An endless transmission belt comprising:

an elongated transmission belt having cavities in opposite ends thereof; and

coupling means for connecting together said opposite ends to form a continuous transmission belt, said coupling means including

an axially compressible-radially expandable and axially expandable-radially compressible sleeve of soft elastomeric material secured to axially extending inner walls of each of said cavities,

a sleeve of open cell mesh on an inner surface of said sleeve of soft elastomeric material including a series of axially spaced helical strands curling in a first direction and intertwined with a similar series of axially spaced helical strands curling in an opposite direction to form said open mesh, and

an elongated flexible coupler having a circumferential dimension slightly larger than a normal inner circumferential dimension of said sleeve of soft elastomeric material for insertion into said sleeve of open cell mesh for gripping thereby upon axial expansion of said sleeves as by an axial tensioning of said belt, said coupler comprising

a length of flexible cable,

a plurality of beads including central openings for receiving said cable,

means on opposite ends of said cable for retaining said beads thereon, and

center stop means on said cable between particular ones of said beads for engaging said opposite ends of said belt as said beads on one side of said center stop are inserted into one of said cavities and beads on

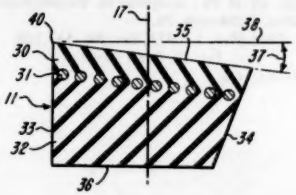
another side of said center stop are inserted into the other of said cavities, said beads being dimensioned to have a circumference slightly greater than the inner circumference of said sleeve of soft elastomeric material to be tightly gripped thereby upon an exertion of an axial force on said belt.

3,857,295

TRAPEZIUM POWER TRANSMISSION BELT

Donald D. Hall; Leonard J. Confer, and James A. Lewis, all of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed May 11, 1973, Ser. No. 359,575
Int. Cl. F16g *5/00*
U.S. Cl. 74—234 **22 Claims**



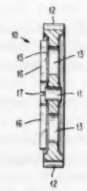
1. A power transmission belt adapted to be operated in a running plane and when viewed in cross section said belt comprising, a pair of oppositely arranged sides with one of said sides being arranged at a greater angle than the other side relative to said plane, a top wall extending between the top edges of said sides, and a bottom wall extending between the bottom edges of said sides, at least one of said walls being arranged at an acute angle beneath a plane arranged perpendicular to said running plane, said sides and walls defining a cross-sectional configuration of a trapezium which utilizes the material of the belt to effectively resist and retard the tendency of said belt to distort when running in associated sheaves wherein each sheave has a wide angle sheave side which engages said other side of said belt.

3,857,296

VIBRATION-DAMPED ROTATABLE DRIVE MEMBER

Kenneth Tsunoda, Closter, N.J., assignor to Paul W. Garbo, Freeport, N.Y., a part interest

Division of Ser. No. 165,498, July 23, 1971, Pat. No. 3,799,025. This application Feb. 11, 1974, Ser. No. 441,430
Int. Cl. F16h *55/14*
U.S. Cl. 74—443 **10 Claims**



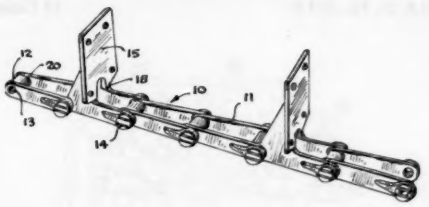
1. A vibration-damped rotatable drive disk that contacts a movable element during rotation, which comprises a layer of viscoelastic material adherent to one face of said disk, and a relatively rigid sheet of a thickness less than that of said disk bonded to said layer of viscoelastic material.

3,857,297

METALLURGY OF CHAINS

George H. Fashfellow, St. Charles; Dort Fauntleroy, Geneva, and Arnold A. Goetze, St. Charles, all of Ill., assignors to Moline Corporation, St. Charles, Ill.

Filed Sept. 13, 1973, Ser. No. 397,119
Int. Cl. F16g *13/02*
U.S. Cl. 74—245 R **4 Claims**



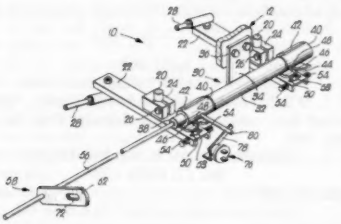
1. A sprocket-driven chain having links each comprising a side bar part and an end part by which one link is articulated to another, each link in the chain being formed from a ferrous material selected from the group consisting of malleable cast iron and medium carbon steel in which the microstructure is essentially bainite.

3,857,298

NEUTRAL SAFETY LOCK FOR HYDRAULIC IMPLEMENT CONTROLS

Cecil L. Case; Ferol S. Fell, and Merle K. Burkhart, all of Newton, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed July 16, 1973, Ser. No. 379,556
Int. Cl. G05g *5/08*
U.S. Cl. 74—469 **15 Claims**



1. In a hydraulic control:

a pair of individually operable, variable displacement, fluid-regulating devices each having a rotatable control member;

an actuating lever for each of said members;

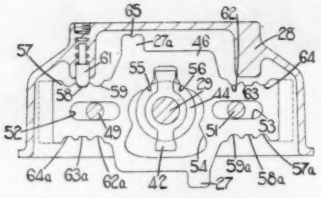
a first lock component on each of said levers and swingable therewith during actuation of the devices by the levers; and

a pair of second lock components mounted for movement in unison and in spaced-apart relationship along fixed, respective paths of travel intersecting those of the corresponding first components for releasably holding the levers against swinging when the first and second components are interengaged.

3,857,299
CONTROL MECHANISMS FOR GEAR BOXES

William McKenzie Meek Morrison, Wolverhampton, England, assignor to Turner Manufacturing Company Limited, Wolverhampton, Stafford, England

Filed Mar. 1, 1973, Ser. No. 337,097
Claims priority, application Great Britain, Mar. 17, 1972, 12534/72
Int. Cl. G05g 9/00
U.S. Cl. 74—473 R 13 Claims

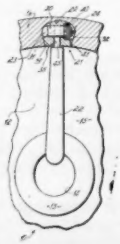


1. A control mechanism for a gear box comprising a body, a control rod in the body and connectible to an external control lever, the control rod carrying an actuating member and being movable angularly as well as axially in the body, the body containing a number of independently movable plates which are arranged transversely of the length of the control rod, axial movement of the rod between successive positions serving to align the actuating member with respective plates, and angular movement of the rod causing the actuating member to produce linear movement of a plate which is aligned therewith, said plates having respective operating elements arranged to engage gear ratio selector devices in the gear box, said plates being identical and each of which is symmetrical about a first plane containing the axis of the control rod and containing the center of a shaped hole through which the control rod passes, each of said plates having pairs of tongues arranged to engage gear ratio selector devices, said tongues being disposed symmetrically on a respective plate at opposite sides of said first plane, said control rod having portions which are alternatively engageable with a recess formed in the periphery of said hole through which said control rod passes.

3,857,300
FOLDING HANDWHEEL HANDLE

David L. O'Dell, South Bend, and Leo A. Shaffer, Mishawaka, both of Ind., assignors to Wheelabrator-Frye Inc., Mishawaka, Ind.

Filed Jan. 16, 1974, Ser. No. 433,680
Int. Cl. G05g 1/10
U.S. Cl. 74—557 10 Claims



1. In combination, a folding safety handle and a handwheel comprising:

a handwheel having an outer face with an outer circumferential portion and a recess therein,

a handle mounting element adapted to be secured in said recess, said element having a bore and a slot transverse to said bore,

an arbor disposed in said bore and rotatable therein,

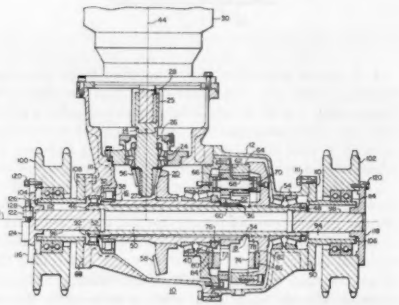
a handle and extension means for connecting said handle to said arbor, said extension means passing through said slot and into said arbor, and

spring means connected between said arbor and said mounting element for biasing said handle into an inoperative position along the outer face of said handwheel.

3,857,301
SPEED REDUCER

Jack G. Hanks, Bethel Park; Mohammed A. El Taher, Gettysburg; Eugene H. Seidling, Monroeville, and James R. Farley, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 1, 1973, Ser. No. 337,240
Int. Cl. F16h 37/06
U.S. Cl. 74—665 GE 14 Claims



1. A speed reducer, comprising:

a housing,

an input shaft journaled in bearings for rotation relative to said housing,

a tubular intermediate shaft journaled in bearings for rotation relative to said housing,

first meshing gearing means coupling said input and intermediate shafts,

an output shaft having first and second ends, said output shaft extending through said tubular intermediate shaft and journaled in bearings for rotation relative to said housing,

second meshing gearing means coupling said intermediate and output shafts,

said housing including first and second tubular projections coaxial with said output shaft which surround its first and second ends, respectively,

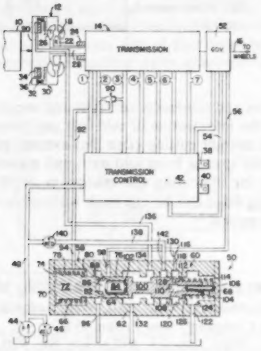
first and second sprocket wheels journaled in bearings on said first and second tubular projections, respectively,

and first and second means coupling the first and second ends of the output shaft to said first and second sprocket wheels, respectively, whereby bending moments applied to the sprocket wheels are resisted by said first and second tubular projections.

3,857,302
TRANSMISSION AND SPEED CONTROLLED LOCK-UP CLUTCH

Hugh C. Morris, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 25, 1973, Ser. No. 373,245
Int. Cl. F16h 45/02; B60k 21/00
U.S. Cl. 74—733 10 Claims



1. A transmission assembly comprising

a torque converter for coupling a power input member with a transmission speed ratio section, hydraulically actuated lock-up clutch arranged to selectively by-pass the torque converter and effectively couple the input means directly with the transmission speed ratio section, and

a control valve assembly for regulating engagement of the clutch, the control valve assembly, including

a source of fluid under pressure

a control valve for selectively communicating the clutch with the source and with a fluid drain,

the control valve including a valve body having a bore, a control spool being movable in the bore to communicate the clutch with the source or drain and resilient means urging the spool toward a position where the clutch is in communication with the drain,

speed sensing means providing a fluid signal having a pressure proportional to rotating speed of a member in the transmission assembly,

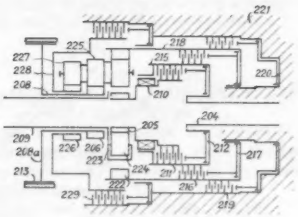
conditioning means operatively communicating the fluid signal to the control valve in response to the transmission speed ratio section having a selected speed gear or relatively higher speed ratio established therein, the control valve being responsive to the fluid signal for effecting both disengagement and engagement of the clutch in the selected speed gear, the control valve being responsive to the fluid signal for maintaining engagement of the clutch in each of the relatively higher speed gears, the conditioning means operatively communicating the fluid signal into the bore to act on one end of the control spool and urge it against the resilient means, and

means tending to maintain positive engagement or disengagement of the clutch, the means for maintaining positive engagement or disengagement of the clutch comprising a reaction piston slidably arranged in a bore of effectively reduced diameter at the other end of the control spool to form a reaction chamber therein and means for selectively communicating the chamber with the fluid signal from the speed sensing means and with a fluid drain.

3,857,303
EPICYCLIC GEAR BOXES

Andre Mouttet, Billancourt, France, assignor to Regie Nationale des Usines, Billancourt, France and Ste des Automobiles Peugeot, Paris, France

Filed Apr. 2, 1973, Ser. No. 347,929
Claims priority, application France, Aug. 6, 1972, 72.20670
Int. Cl. F16h 57/10
U.S. Cl. 74—761 3 Claims



1. In an epicyclic gear box having four forward speed ratios and one reverse speed ratio,

input shaft means,

output shaft means,

first sun gear means,

second sun gear means,

annulus gear means,

planet gear carrier means,

first planet gear means carried by the carrier means,

second planet gear means carried by the carrier means, said first and second planet gear means being in mesh with each other, said first planet gear means being in mesh with the first sun gear means, and said second planet gear means being in mesh with the second sun gear means and with the annulus gear means,

a first immobilizing device having a rotary drum rotatable with said second sun gear means,

a second immobilizing device connected with said annulus gear means,

a first clutch means connected to said input shaft means and associated with said first sun gear means, and

a second clutch means connected to said input shaft means and associated with said annulus gear means, the improvement comprising:

third sun gear means, and

a third immobilizing device including hub means rotatable with the third sun gear means, the hub means of the third immobilizing device being located axially beside the rotary drum of the first immobilizing device and between the rotary drum of the first immobilizing device and the planet gear carrier means, said third sun gear means co-operating with the third immobilizing device whereby the third immobilizing device is operative to selectively hold stationary the third sun gear means, and the third sun gear means meshing with the second planet gear means, said immobilizing devices and said first and second clutch means being selectively operative independently of each other to provide the selected forward or reverse speed ratio.

3,857,304
GAS PEDAL ARRANGEMENT

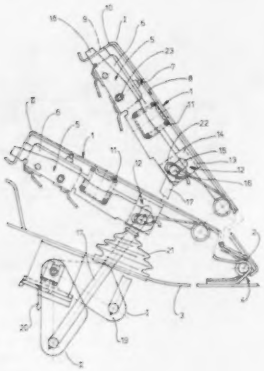
Wilhelm Berndt, Meine, Germany, assignor to Volkswagenwerk AG, Wolfsburg, Germany

Continuation of Ser. No. 315,576, Dec. 15, 1972, abandoned. This application Aug. 15, 1973, Ser. No. 388,431

Claims priority, application Germany, Dec. 18, 1971, 2162940

Int. Cl. B60k ; G05g

U.S. Cl. 74—877 **7 Claims**



1. In a gas pedal arrangement for an internal combustion engine including a gas pedal and an associated switch movable with the gas pedal and actuated by the gas pedal when the gas pedal is moved beyond a full throttle position, the improvement comprising linkage means responsive to the gas pedal for transmitting movement of the gas pedal to an engine carburetor, stop means for preventing the linkage means from transmitting to the engine carburetor movement of the gas pedal beyond the full throttle position, a rocker member pivotally and detachably mounted at one end on the gas pedal, at least one spring located between the rocker member and the gas pedal for biasing the rocker member away from the gas pedal, and two supports for the rocker member, against which supports the rocker member is biased by said at least one spring, one support being located adjacent the one end of the rocker member and the other support being located in a zone wherein the linkage means is releasably coupled to the rocker member, said zone being spaced from the one end of the rocker member, the two supports including an opening formed in an edge portion of the gas pedal and an axle associated with the gas pedal and traversing the rocker member, relative movement of the rocker member toward the gas pedal occuring when the gas pedal is moved beyond the full throttle position such that the linkage means effects said relative movement against the biasing of said at least one spring and said relative movement of the rocker member toward the gas pedal actuates the switch.

3,857,305
MILLING CUTTERS

Philip Lichtman, 3 Valley Spring Rd., Newton, Mass. 02194

Filed Apr. 5, 1974, Ser. No. 458,332

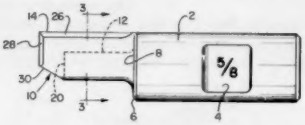
Int. Cl. B21k *5/12*

U.S. Cl. 76—101 A **10 Claims**

1. A milling cutter blank for use in making special purpose cutters comprising:

a shank having a center axis;

a cutter head formed as an integral longitudinal extension of said shank, said cutter head comprising a single cutter flute section and a heel section formed integral with said flute section, said heel section having a longitudinally-extending surface that has a circular curvature in cross-section with the center of curvature being aligned with said center axis, said flute section having first and second flat longitudinally-extending side surfaces that are at least coextensive with and also extend laterally of said heel section, said flute section having a third flat longitudinally-extending surface that is radially spaced from said heel



section and intersects said first and second side surfaces, with the intersection of said first and third surfaces forming a straight cutting edge that extends parallel to and is radially spaced from said axis, and means on said cutter head for indicating the maximum depth to which said cutting edge can be cut back without intruding into said heel section.

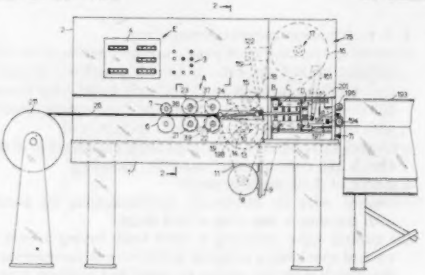
3,857,306
CABLE CUTTING AND STRIPPING MACHINE

Ragnar Gudmestad, West Allis, Wis., assignor to Artos Engineering Company, New Berlin, Wis.

Filed June 15, 1973, Ser. No. 370,217

Int. Cl. H02g *1/12*

U.S. Cl. 81—9.51 **18 Claims**



1. In an insulated wire cutting and stripping machine, the combination of a frame extending lengthwise between opposite ends thereof; wire stock feeding means operatively mounted on said frame adjacent one of said ends thereof; wire stock clamping means operatively mounted on said frame between said stock feeding means and said other end of said frame at a predetermined distance from said feeding means; wire stock cutting means operatively mounted on said frame between said clamping means and said other end of said frame in lengthwise back and forth shiftable relation thereto; and actuating means operable to move said clamping means and said cutting means into and out of cooperative engagement with stock played out by said feeding means and to shift said cutting means in the longitudinal direction of said played out stock alternately toward and away from said clamping means.

3,857,307
SHOCK ABSORBER ASSEMBLY TOOL

Robert W. Hegel, Monroe, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.

Filed July 11, 1973, Ser. No. 378,380

Int. Cl. B25b *13/48*

U.S. Cl. 81—90 C **16 Claims**

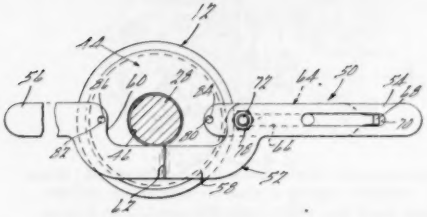
1. For use with a cartridge shock absorber in a vehicle suspension including a generally cylindrical housing having at

least one open end, a shock absorber cartridge adapted to be removably inserted within the housing and have its piston rod project from the open end thereof, and an annular retaining member adapted to be operatively mounted adjacent the open end of the housing for securing the cartridge therein, the retaining member including at least two connecting elements for use in applying a rotational force thereto, the improvement which comprises,

a tool for assembling and disassembling said retaining member and said shock absorber housing,

said tool comprising a pair of spaced-apart handle portions, an intermediate portion connected to said handle portions and defining a recessed area therewith,

an adjustable member movably secured to one of said handle portions adjacent one side of said recessed area, and first and second connecting parts mounted one on said



adjustable member and the other on the handle portion and located on the opposite side of said recessed area from said adjustable member,

said handle portions being offset from one another whereby said handle portions lie in spaced parallel planes, said handle portions being offset a distance equal to approximately the thickness of said adjustable member, whereby said connecting parts are located in a common plane extending generally parallel to but spaced from said first and second first-mentioned planes,

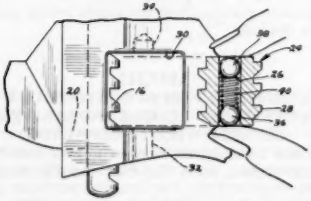
said tool being positionable such that the piston rod of the shock absorber is received within the recessed area and said connecting parts are engageable with said first and said connecting elements on said retaining member, whereby a rotational force applied against said handle portions results in rotation of said retaining member relative to said housing.

3,857,308

ADJUSTABLE WRENCH

Carl R. Lindgren, 1432 S. Arlington Ave., Duluth, Minn. 55811

Filed June 15, 1973, Ser. No. 370,202
Int. Cl. B25b *13/16*
U.S. Cl. 81—157 **2 Claims**



1. In a wrench having a fixed jaw and a movable jaw slidably mounted on said fixed jaw, a cylindrical screw member rotatably mounted in an aperture formed on the base of the fixed jaw engaged with a rack on the movable jaw for moving said movable jaw, the improvement in the rotatably mounted screw member, said improvement including

a. a cylindrical screw member,

b. a base on said fixed jaw having

c. an aperture therein

d. a first socket formed in said base in alignment with said aperture,

e. a second socket formed in said base in alignment with said aperture and said first socket,

f. socket means formed in said screw member, including a bore extending axially through said screw member,

g. a first ball member interposed between said first socket of said base and the bore on one end of said screw member,

h. a second ball interposed between said second socket of said base and the bore on the other end of said screw, and

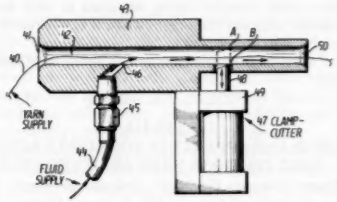
i. spring means in said bore for urging said first and second balls into said first and second sockets.

3,857,309

FILAMENT BREAKAGE DETECTION AND CORRECTION

Walter Eugene Bradley, Fort Mill, S.C.; Raeford Warren Clontz, Charlotte; Terry Stephen Floyd, Matthews, and James Reed Honeycutt, Charlotte, all of N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 413,109
Int. Cl. B26d *5/28*
U.S. Cl. 83—13 **9 Claims**



1. Apparatus for feeding continuous filamentary material to a continuous multifilament structure comprising: a source of continuous filamentary material; guide means defining a path along which said filamentary material is moved; means for forwarding said material along said path, said means comprising a plurality of pressurized fluid supply means directed in a shallow angle of tangential convergence with the path of said material; means for clamping and cutting said material, said means movably mounted to move from a position of engaging said material to a position of nonengagement; means for initiating flow of said pressurized fluid and movement of said clamping and cutting means from a position of engaging said material to a position of nonengagement, to feed said material to said multifilament structure.

3,857,310

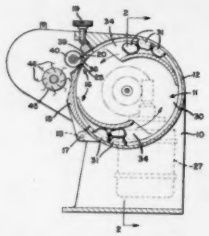
FOOD CUTTING AND DICING APPARATUS

Gerard A. Tiby, Ivry S/Seine, France, assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed Dec. 18, 1972, Ser. No. 316,281
Int. Cl. B26d *7/06*
U.S. Cl. 83—26 **14 Claims**

1. In an apparatus for cutting food articles such as vegetables and fruits, including a housing having wall means, a passage through the wall means, feed means for receiving food articles and moving them adjacent the passage through the wall means, and slicer blade means adjacent the passage for cutting the food articles into slices as they are moved therepast and directing the cut portions through the passage, the improvement comprising:

a. strip blade means adjacent the passage for cutting the slices into strips,
b. means mounting said strip blade means for removal when it is desired to cut the articles into slices,
c. a rotatable cutter member mounted opposite the discharge of strips from the strip blade means and having peripheral knife means for cutting the strip portions generally into cubes,
d. means for moving the feed means and the cutter member in timed relationship to cut the strips into cubes,



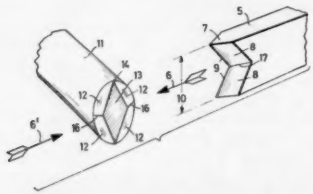
e. a port in the wall means,
f. a door removably attachable over said port and forming a portion of the wall means,
g. the passage through the wall means being through said door,
h. The cutter member being attached to said removable door for removal therefrom when it is desired to cut the articles into strips, and
i. said slicer and strip blade means being attached to said door.

3,857,311

METHOD AND APPARATUS FOR MANUFACTURING WIRE SECTIONS WITH RELIEVED ENDS

Paul Esser, Cologne, Germany, assignor to Meyer, Roth & Pastor Maschinenfabrik GmbH, Cologne, Germany

Filed Aug. 8, 1972, Ser. No. 278,868
Claims priority, application Germany, Aug. 19, 1971, 2141513
Int. Cl. B23d *15/00;* **B26d** *3/16*
U.S. Cl. 83—51 **4 Claims**



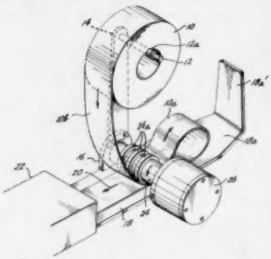
1. In an apparatus for shearing sections of wire preparatory to welding the sheared sections from an inwardly disposed axial core defined by rearwardly disposed relief surfaces, said apparatus including a pair of shear blades movable from opposite directions in proximal relation during a single shear stroke effected by simultaneous movement of said shear blades transversely of the longitudinal axis of the wire being sheared, the improvement in which said blades each have a generally V-shaped profile both in top plan and in side elevation and define a leading, notched, transverse cutting edge along it entire length corresponding to a corresponding transverse demension of the wire being sheared, the cutting edge of the respective blades comprising a plurality of planar surfaces converging toward each other and toward the leading cutting edge, the cutting edges of the respective blades cooperating and forming a rhombic opening when viewed in side elevation and meeting in proximal relation substantially coincident with the outer surface of the wire section being severed during a single shear stroke.

3,857,312

LOW DRAG VARIABLE DEMAND STRIP FEED

Paul A. Carlstedt, Seattle, Wash., assignor to CX Corporation, Seattle, Wash.

Filed Sept. 7, 1973, Ser. No. 395,368
Int. Cl. B65h *17/42*
U.S. Cl. 83—236 **12 Claims**



1. Apparatus wherein strip material of resilient stiffness is supplied and received by progressive endwise movement of the strip, comprising supply means from which strip material may be forcibly drawn, strip receiving means operable to draw strip material to it at variable rate but operable with a drawing force below that required to draw the strip material from the supply means at such variable rate, and strip feed means acting on the strip material intermediate said supply and receiving means comprising a substantially constantly rotated first element having a peripheral portion frictionally engageable with one face of the sheet strip and by such engagement operable to draw sheet strip material forcibly from the supply means, and a second element stationed adjacent to the first element across a gap to permit forming a running slack loop of the strip with the sides of such loop passing between such elements and the width of the base of such loop exceeding the width of the gap, the first and second elements being so positionally related that incidence of the strip from the supply means to a first side of the loop requires deflection of the strip partially around the peripheral portion of the first element, and departure of the strip from the opposite side of the loop toward the receiving means moves it across the second element, whereby drawing of the strip from said opposite side of the loop toward the receiving means shortens the loop and as a result of such shortening together with the resilient stiffness of the loop forces the first side thereof into frictional engagement with the peripheral portion of the first element so as to draw more strip material from the supply means and thereby relengthen the loop.

3,857,313

APPARATUS FOR SEVERING CONTINUOUS WIRE TO PREDETERMINED LENGTH AND DELIVERING SEVERED WIRE TO CONVEYOR

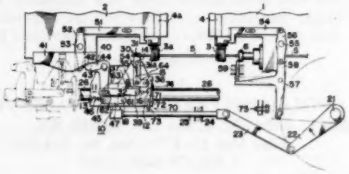
Shigeru Endo, Toda, Japan, assignor to Pilot Man-Nen-Hitsu Kabushiki Kaisha, a/k/a The Pilot Pen Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1973, Ser. No. 410,752
Claims priority, application Japan, Nov. 1, 1972, 47-109614
Int. Cl. B26d *5/22*
U.S. Cl. 83—277 **8 Claims**

1. An apparatus for severing a wire drawn from continuous wire stock to a predetermined length and delivering the severed wire to conveyer, said apparatus comprising:

a pair of movable and immovable opposite blocks (1,2) each having a periodically and successively rotated conveyer means gripping jaws of a pair on the opposite conveyer means being faced with each other in alignment;

a carrier means (10) movable in the direction perpendicular to the conveyer moving direction, said carrier means comprising a lower carrier member (11) reciprocable for a predetermined length and an upper carrier member (12) placed upon said lower carrier member to be slidable relative to the latter in the reciprocating direction of said lower carrier member, said upper carrier member having a clamp (30) for drawing the wire from the continuous wire stock through said gripping jaws at a wire severing and delivery zone while said gripping jaws are open;



means (40) for stopping the movement of said upper carrier member in cooperation with a stopper member (41) secured to said movable block while said lower carrier member is moving forwardly;

means for opening said clamp by advancing movement of said lower carrier member while the movement of said upper carrier member is stopped;

means for retreating said carrier means after said clamp has opened, said retreating means closing said clamp at the most retreated position of said carrier means;

means (50) for closing said gripping jaws locating at said wire severing and delivery zone just before said clamp is open; and

wire severing means provided near the most retreated position of said clamp.

3,857,314

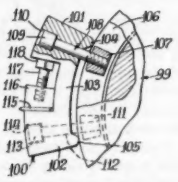
ROTARY CUTTER

Clyde G. Gregoire, 4N194 Brier Ln, Bensenville, Ill. 60106

Filed July 13, 1973, Ser. No. 378,956

Int. Cl. B23d *25/12*

U.S. Cl. 83—346 **4 Claims**



1. A cutter for the printing industry comprising a pair of cooperative spaced apart parallel rollers, one of said cooperative rollers constituting a knife holding roller and the other of said cooperative rollers constituting an anvil roller, knife mounting members, means on the under surfaces of said knife mounting members arranged and constructed to provide for snug and stable engagement with the outer cylindrical surface of said knife holding roller, a knife extending axially of the cooperative rollers, means supporting the knife on the knife mounting members in a manner to project generally radially from said knife mounting members, and means securing said knife mounting members on the outer surface of the knife holding roller, said means on the under surfaces of said knife mounting members including arcuately spaced apart projection means extending longitudinally and axially of the knife holding roller for arcuate spaced apart engagement with the outer cylindrical surface of the knife holding roller.

3,857,315

DEVICE FOR SETTING KNIFE HOLDERS, PARTICULARLY AT A BAND CUTTING MACHINE

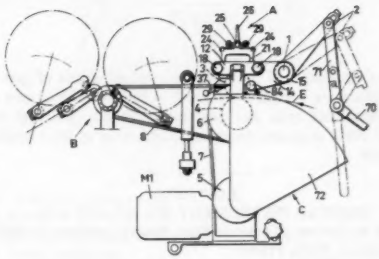
Sven Gerhard Andersson, Ljungskile, Sweden

Filed Aug. 14, 1972, Ser. No. 280,302

Claims priority, application Sweden, Aug. 20, 1971, 10584/71; Aug. 20, 1971, 10585/71

Int. Cl. B26d *1/22*

U.S. Cl. 83—504 **39 Claims**



1. A device for use in cutting machines for cutting fabrics into bands, comprising:

a. at least one set of a plurality of knife holders,

b. at least one slide shaft along which the knife holders are arranged with an equal spacing between the knives,

c. at least one ball bushing on each knife holder and having a surrounding contact with said slide shaft,

d. at least one wire drawn from each knife holder, said wires from the different knife holders in each set of knife holders running substantially in parallel with each other and with said slide shaft to a position remote from said slide shaft, and

e. a common setting means arranged at said position to which setting means all said wires of said set of knife holders are attached, said setting means and said wires being so arranged that upon actuation of said setting means all said knife holders are moved along said slide shaft in the same direction while permanently maintaining the equal spacing between the knives.

f. at least one counter-cutting roll coacting with the knives during the cutting operation,

g. means for moving the knives into and out of contact with said counter-cutting roll,

h. means for holding the knives in their cutting position in pressing abutment to said counter-cutting roll, and

i. means for entirely relieving said slide shaft from the pressure the knives are subjected to during the cutting operation, the entire pressure being taken up by said means for holding the knives in pressing abutment to said counter-cutting roll.

3,857,316

SHEAR CUTTER

Alan Roy Handley, 6 Oak Tree Gdns., Wordesley, England

Filed Sept. 10, 1973, Ser. No. 395,639

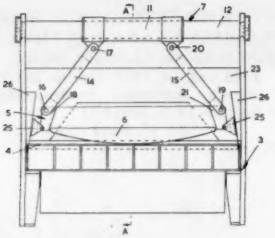
Claims priority, application Great Britain, Sept. 9, 1972, 41975/72

Int. Cl. B26d *5/08;* **B26f** *1/44*

U.S. Cl. 83—644 **14 Claims**

1. A shear cutter comprising a first blade, a second blade having a curved cutting edge co-operating with the first blade, and means for oscillating the second blade, said oscillating

means being adapted, in use, to move the second blade in such a manner that the pivot point of the second blade moves along the said curved cutting edge, said oscillating means including a member which is linearly oscillatable in or parallel to the



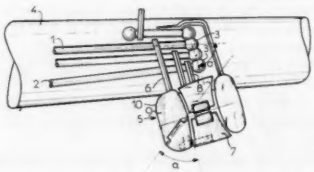
plane of oscillation of the second blade, and a pair of spaced links which are pivotally attached to the member at one of their respective ends and are pivotally connected with the second blade at spaced locations at the other of their respective ends.

3,857,317

MUSICAL INSTRUMENT SPATULATE KEY

Robert V. Carree, Mantes-la-Ville, France, assignor to Buffet Crampon, Paris, France

Filed Apr. 9, 1974, Ser. No. 459,322
Claims priority, application France, May 2, 1973, 73.15659
Int. Cl. G10d *7/00*
U.S. Cl. 84—380 **9 Claims**



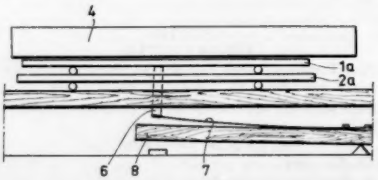
1. In a musical instrument, a spatulate key comprising a plate, a tab, means pivotally connecting the tab to the plate with one edge of said tab adjacent the plate and parallel to the pivot axis, and an entraining member fixed to the tab at a predetermined distance from the pivotal connection.

3,857,318

IMPROVEMENTS IN DEVICE AT MUSICAL INSTRUMENTS WITH A PIANO KEYBOARD OR THE LIKE

Klas Einar Jansson, 60, Jarnvagsgatan, Motala, and Staffan Gunnar Sjostrand, 3, Axgrand, Linkoping, both of Sweden

Filed Feb. 27, 1973, Ser. No. 336,300
Int. Cl. G01d *13/08*
U.S. Cl. 84—403 **4 Claims**



1. A musical instrument comprising in combination:

a plurality of tone bars for the respective individual tones of the instrument, said tone bars being disposed in two parallel rows one overlying the other,

tone bar striking means comprising a plurality of keys and a hammer for each key adapted to be actuated by the associated key for striking the related tone bar,

said hammers being positioned generally along one of said rows of tone bars, at least some of the tone bars in said one row defining a recess for permitting a hammer to pass therethrough and strike an associated tone bar in the other said row,

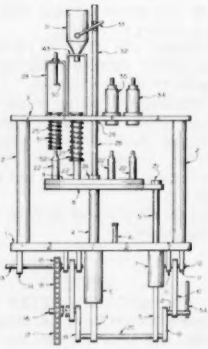
and a resonance box positioned over said tone bars and defining therein apertures in the side of the resonance box disposed opposite said tone bars, at least some of said apertures which are disposed opposite those tone bars in the row more remote from said resonance box being larger than those apertures which are disposed opposite tone bars in the row closer to said resonance box.

3,857,319

SMALL ARMS CARTRIDGE RELOADER PRESS

Arthur L. Welch, Rt. 4, Box 157, Merrill, Wis.

Filed May 29, 1973, Ser. No. 364,604
Int. Cl. F42b *33/02*
U.S. Cl. 86—23 **1 Claim**



1. In a small arms cartridge reloader press, a frame comprising a base, support posts extending upward from said base, and a die carrying platform mounted on said support posts, said die carrying platform having a number of die holding stations arranged thereon; a single throw crankshaft pendulously mounted under said base, a first ram and a second ram operatively connected to the throw of said crankshaft and slidably guided in vertical guide sleeves attached to the bottom of said base, a support plate mounted on top of said rams, a shell holder plate rotatably riding on said support plate and centered by the first of said rams, an extension of said first ram extending through the center of said die platform, said shell holder plate having a number of shell holders thereon, said shell holder plate being indexable to align the shell holders with said die holding stations to form shell reloading stations, said second ram supporting the edge of said support plate; one of the reloading stations having means to meter powder to a primed case, and one station having means to seat a bullet in the case, said means for metering powder including a powder measure mounted above the die platform and operated by the first ram extension and a powder metering die vertically slidably mounted in the die carrier platform, said powder metering die having a secondary die vertically slidably contained therein, said secondary die having a powder funnel portion above a case receiving chamber, said powder funnel serving to

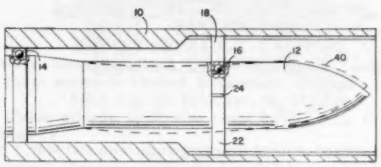
extend the time in which powder can run ino the cartridge case, said bullet seating means including a bullet seating punch mounted above the die platform and a vertically slidable bullet seating die mounted in said platform.

3,857,320

NODE SUSPENDED FLEXIBLE ROCKET

Robert G. Conard, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 29, 1973, Ser. No. 327,517
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.808 **1 Claim**



1. In combination with a launch tube having a rear smaller diameter portion and a forward larger diameter portion,

a spin stabilized missile having two ball bearing assemblies mounted thereon,

each of said bearing assemblies comprising an inner and an outer race and a series of balls therebetween,

the inner race of the rearmost bearing assembly being mounted on said missile at the rear bending node of the missile and the outer race bearing against the wall of the smaller diameter rear portion of said launcher,

a plurality of longitudinally extending slotted rails mounted in the forward larger diameter portion of said launcher, the inner race of the forward bearing assembly being mounted on said missile at the forward bending node of said missile,

fins attached to the outer race of said forward bearing assembly and slideably received in the slots in said rails, whereby the support being at the node points wherein there is no movement relative to said launcher the missile principal longitudinal axis of inertia will remain coincident with the longitudinal axis of the launcher regardless of any bending of the missile induced by rotation thereof.

3,857,321

SUBMARINE MISSILE LAUNCH SYSTEM

Paul Cohen, Glen Cove, N.Y., assignor to Subcom, Inc., Glen Cove, N.Y.

Filed July 30, 1973, Ser. No. 383,586
Int. Cl. F41f *3/08*
U.S. Cl. 89—1.81 **21 Claims**

1. A submarine missile launcher for a submarine having a propulsion tube and a tunnel connecting the interior propulsion tube and the exterior of the submarine comprising

a circumferential resilient covering lining a lengthwise extent of the interior of said tunnel,

flexible means projecting to extend from said covering radially inwardly toward the tunnel axis for engagement with a missile being launched from said tunnel,

a plurality of fluid dispensing jets relatively spaced about the tunnel,

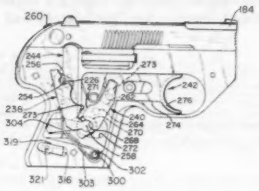
and sensor means connected with said jets and responsive to the flexing of said flexible means during the movement of a missile through the tunnel to cause said jets to apply a stream of fluid laterally to the missile.

3,857,322

FIREARM

Philip R. Lichtman, 3 Valley Spring Rd., Newton, Mass. 02192

Filed Dec. 10, 1973, Ser. No. 423,477
Int. Cl. F41c *17/08, 19/14*
U.S. Cl. 89—145 **20 Claims**



1. A firearm comprising:

a frame;

a hammer in said frame pivotable between cocked and firing positions;

a spring mounted in said frame for urging said hammer to its firing position;

a sear movable to a position to hold the hammer cocked and to another position to release the cocked hammer so that the hammer can fire the firearm;

a movable sear drawbar having sear-engaging means for engaging the sear and moving it to hammer-releasing position;

a movable hammer drawbar having cocking means operative during double action for moving said hammer for firing position to cocked position and thereafter releasing said hammer so that said hammer can fire said firearm;

a trigger movably mounted to said frame;

a pivoting lever pivotally mounted to said frame and pivotally connected to said sear drawbar and said hammer drawbar; and

means pivotally connecting said pivoting lever to said trigger, said pivoting lever being arranged so that when said trigger is pulled said pivoting lever will (a) cause said sear drawbar during single action to move said sear to hammer releasing position and (b) cause said hammer drawbar during double action to move said hammer from firing position to cocked position and thereafter to release said hammer so said hammer can fire said firearm.

3,857,323

SLIDE GUIDE FOR RIFLES

William B. Ruger, Southport, and Harry H. Sefried, II, New Haven, both of Conn., assignors to Sturm, Ruger & Co. Inc., Southport, Conn.

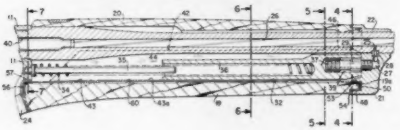
Filed Oct. 2, 1972, Ser. No. 293,757
Int. Cl. F41d *5/10*
U.S. Cl. 89—191 R **12 Claims**

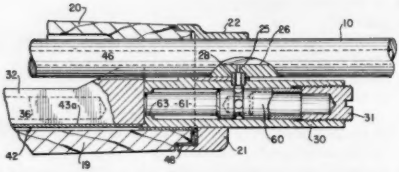
1. In a gas operated auto-loading rifle having a receiver, a barrel secured to the receiver, a gas pipe mounted on the barrel with the axis thereof generally parallel to the bore of the barrel, the gas pipe being closed at its forward end and having an opening at its rearward end, a gas port for powder combustion gases formed in the side wall of the barrel and communicating with the bore of the barrel and with the gas pipe, a bolt slidably mounted for longitudinal travel in the receiver behind the barrel, a slide having a slide handle connected to the bolt and a slide block disposed adjacent the opening at the rear-

ward end of the gas pipe, said slide being movable longitudinally with respect to the barrel from a forward position at which the bolt is closed to a rearward position at which the bolt is open, a slide spring urging the slide to its forward bolt closed position, co-acting slide drive means associated with the slide and the gas pipe for driving the slide to its rearward bolt open position when powder combustion gases enter the gas pipe, and guide means for guiding the slide block, the improvement which comprises;

slide guide means for guiding the slide block as the slide moves longitudinally with respect to the barrel, said guide means comprising:

an elongated generally channel-shaped member that is disposed beneath the barrel and that extends along the slide from adjacent the gas pipe to adjacent the receiver, said channel-shaped member having a bottom wall, two side walls and an open top, the bottom wall and the upstanding side walls of the channel-shaped members being disposed in close proximity to the bottom and side surfaces of the slide block and the underside of the barrel being disposed in close proximity to the top surface of the slide block whereby said bottom wall and side walls of the channel-shaped member and the underside of the barrel cooperate to guide the slide block and to maintain it in alignment with the gas pipe as the slide moves longitudinally with respect to the barrel,





means for releasably securing the forward end of the channel-shaped member to the barrel in position relative to the gas pipe to insure that the co-acting slide drive means of the slide and the gas pipe are disposed in operational relationship when the slide is moved to its forward position, and

means for releasably securing the rearward end of the channel-shaped member at the receiver.

3,857,324

SEMI-AUTOMATIC FIREARM

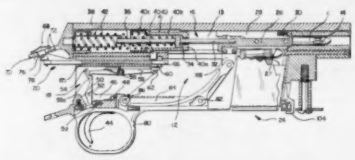
William A. Tant, 1220 Daladams St., Raleigh, N.C. 27603

Filed Apr. 13, 1973, Ser. No. 350,747

Int. Cl. F41d *5/00, 11/02*

U.S. Cl. 89—197 **14 Claims**

1. A semi-automatic firearm comprising: a receiver having a longitudinal chamber formed therein; means for inserting one cartridge at a time into said receiver and moving the inserted cartridge to a firing chamber; a firing pin means movably mounted in said longitudinal chamber for striking and firing a respective cartridge positioned in said firing chamber; a striker assembly mounted in said chamber in alignment with and biased toward said firing pin means, said striker being movable between a cocked position and firing pin striking position; a movably mounted sear rearwardly spaced from said firing pin means and movable between a striker engaged position and a disengaged position, said sear normally assuming said striker engaged position where it acts to hold said striker in said cocked position, said sear being further operative to disengage said striker allowing the latter to strike said firing pin means; a trigger mechanism operatively connected to said sear for moving the same from said striker engaged position to said disengaged position and back to said striker engaged position; a safety interlock mechanism associated with said receiver and operative to lock and unlock said sear; a bolt slidably mounted in said chamber between said striker and firing point and biased toward said firing point, said bolt being aligned with said striker and operative upon firing to recoil and engage said striker, causing said striker to be moved back



to said cocked position for engagement with said sear; a bolt shaft fixed to said bolt and extending rearwardly therefrom through the internal chamber formed within said receiver; a stop fixed intermediately on said bolt shaft; a bolt return spring disposed between said stop and the rear portion of said receiver, thereby biasing said bolt toward said firing point; an extractor and ejector assembly carried by said bolt; means for actuating said extractor and ejector assembly in response to the recoil movement of said bolt; and means for manually moving said striker back to said cocked position where said striker is engaged and held by said sear, thereby enabling said firearm to be cocked in the absence of a recoil movement from said bolt.

3,857,325

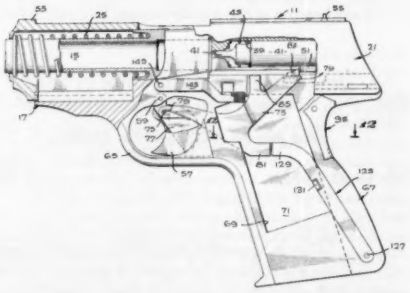
SEMI-AUTOMATIC FIREARM

Frank S. Thomas, 1715 Camden Ave., Los Angeles, Calif. 90024

Filed Sept. 4, 1973, Ser. No. 393,709

Int. Cl. F41d *11/02*

U.S. Cl. 89—138 **18 Claims**



1. A semi-automatic double action firearm comprising:

a frame including a hand grip adapted to be grasped by the user when the firearm is fired;

a barrel affixed to said frame having a muzzle and a firing chamber adapted to receive a cartridge;

a slide member surrounding said barrel mounted for axial movement on said frame;

first resilient means between said slide member and said barrel urging said slide member toward the muzzle of said barrel;

a firing pin mounted for axial movement within said slide member;

second resilient means between said firing pin and said slide member urging said firing pin toward the muzzle of said barrel with a force greater than that exerted by said first resilient means on said slide member;

a trigger mounted for motion relative to said frame;

a trigger bar articulated to said trigger and adapted to engage said firing pin and move it in the direction away from said muzzle in response to movement of said trigger and to release said firing pin when the trigger has moved a predetermined distance; and

lever means pivotably mounted on said frame and adapted to restrain said slide member against movement relative to said frame when said hand grip is grasped for firing.

3,857,326

ROTARY HYDRAULIC MACHINES

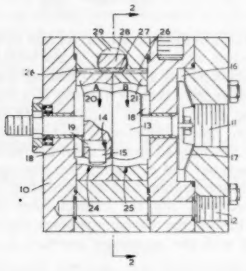
George Alvah Blandford, Conventry, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Aug. 16, 1972, Ser. No. 281,239

Claims priority, application Great Britain, Aug. 17, 1971, 38469/71

Int. Cl. F04b *13/06*

U.S. Cl. 91—492 **4 Claims**



1. A rotary hydraulic machine comprising a housing having an inlet and an outlet, a rotor mounted within the housing, a plurality of pistons slidable in radial bores in the rotor, the said bores successively communicating, in use, with the inlet and the outlet, a port plate fixed in the housing and engaged by the rotor to act as a valve to control communication between said bores in the rotor and the inlet and outlet, said rotor including ports communicating respectively with the bores and opening onto a face of the rotor which is engaged by said port plate, said port plate having a kidney-shaped port spaced from the edge of the port plate in the path of movement of the rotor ports thereover, by a distance greater than the width of each of said rotor ports, and a cam ring surrounding the rotor and having an internal cam surface engageable by the pistons, the cam ring also having an external surface of revolution which engages a corresponding surface within the housing, and the cam ring being rotatable within the housing about the axis of said outer surface, said outer surface being eccentric with respect both to the axis of the cam surface and the axis of the rotor, and means for rotating the cam ring within the housing, the cam ring being positioned so as to provide movement of said piston while said ports are shut, whereby, in use, there is a period in each revolution of the rotor when each port is shut off by the port plate so that liquid in the associated bore is subjected to a change of volume and pressure, said machine further including two cam rings arranged with the areas of their external surfaces equally spaced from the axis of the rotor, said axes lying in a common plane and which the rotor has two rows of radial bores slidably containing pistons engaged with the internal cam surfaces of the cam rings respectively.

3,857,327

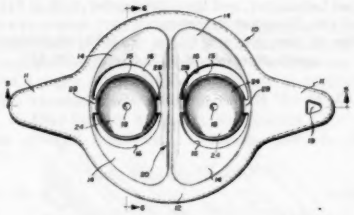
DOUBLE EGG SEPARATOR

Samuel Joseph Popeil, Chicago, Ill., assignor to Popeil Brothers Inc., Chicago, Ill.

Filed May 18, 1973, Ser. No. 361,430

Int. Cl. A47j *43/14*

U.S. Cl. 99—499 **7 Claims**



1. A double egg separator comprising in combination,

a support rim surrounding a substantially circular central portion,

said substantially circular central portion defined by a depending arcuate drain wall thereby substantially to close off the lower portion of the central portion,

a stand ring depending from said support rim circumferentially thereabout to render the egg separator self standing, said drain wall provided with an egg cracker wall separating said central portion into two distinct egg containing portions,

each of said egg portions provided with a yolk cup said yolk cup being surrounded by interrupted first drain means,

said first drain means comprising crescent-shaped slots interrupted by at least one support spider attached between the yolk cup and drain wall thereby to support each of said yolk cups from said drain wall,

and support means extending laterally from the rim for supporting the egg separator atop a mixing bowl, the entire unit being oriented in proportion for molding from a single piece of material.

3,857,328

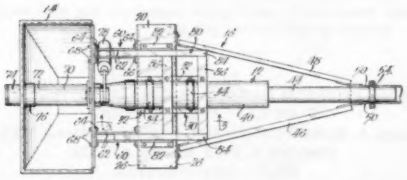
CONCRETE PLACER ASSEMBLY

Eugene D. Taylor, Kenosha, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Sept. 20, 1973, Ser. No. 399,103

Int. Cl. F04b *15/02, 11/00*

U.S. Cl. 92—129 **5 Claims**



1. Concrete pumping apparatus including an elongate pumping cylinder, a concrete receiving hopper, and a support, said support comprising an elongate member having wheels at opposite ends; clamp means connecting an intermediate portion of said cylinder directly to an intermediate portion of said member with said cylinder extending substantially perpendicular to said elongated member; connecting means connecting an open end of said cylinder to said hopper; brace means having one end connected to said member and an opposite end connected to said hopper; first and second elongate braces, said braces each having one end connected to said

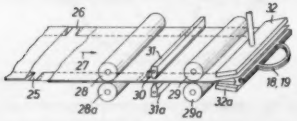
member adjacent respective ends of said member, said braces having opposite ends connected to said cylinder adjacent the free end thereof so that said cylinder forms a major part of said support.

3,857,329

FABRICATION OF A CARRYING BAG FROM THERMOPLASTIC SYNTHETIC FILM

Michael Lehmacher, and Hans Lehmacher, both of 5215 Mondorf Ub., Troisdorf, Germany

Division of Ser. No. 5,417, Jan. 5, 1970, abandoned. This application July 18, 1973, Ser. No. 380,257
Int. Cl. B31b *1/86*
U.S. Cl. 93—35 H **9 Claims**



1. A method for fabrication of carrying bags from thermoplastic synthetic plastic film, each bag with its longitudinal sides infolded throughout their lengths to form respective like infold panels joining respective edges of two opposed generally rectangular walls to constitute a bag body, and at the bag mouth having a carrying grip structure comprised of opposed parallel grip bars extending substantially across the bag body width and attached to a mouth inner margin of a respective wall; said method comprising the steps of;

providing a continuous web of flattened tubular thermoplastic synthetic plastic film comprised of two film layers continuously longitudinally connected at both edges, and advancing the web longitudinally;

at longitudinal spacing corresponding to desired product bag length, producing successively spaced pairs of edge notches through both web layers, the notches of each pair at opposite locations in the respective web edges, each notch having a depth corresponding substantially to the depth of the product side fold panel width; producing in the advancing web after said notches like longitudinal side infolds on both edges;

transversely severing the advancing web across the leading edges of the successive notch pairs, to separate successive bag sections from the leading end of the web, the severance of each bag section defining the mouth margins of a following bag section;

spreading the film layers at successively defined mouth margins and inserting the said grip bars between the spread layers at the mouth region;

and transversely welding the respective bag wall mouth margins to the inserted grip bars.

3,857,330

APPARATUS AND METHOD FOR MANUFACTURING A TOROID SHAPED HOT DOG

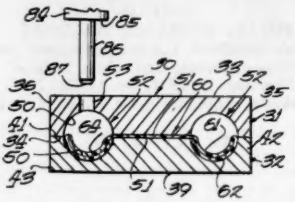
George A. Ruckstaetter, 9586 W. Gullway, Richland, Mich.

Filed Dec. 6, 1973, Ser. No. 422,558
Int. Cl. A22c *7/00, 11/04*
U.S. Cl. 99—354 **3 Claims**

1. An apparatus for manufacturing a circular doughnut shaped hot dog comprising:

a flattened hollow circular casing having a top layer and an interconnected bottom layer, the top and bottom layers defining a compartment therebetween, and an opening disposed in the top layer communicating with the compartment;

a mold in the form of an elongated box-like member, the mold divided into a top half section and a bottom half section, the top half section having opposed interior and exterior surfaces, opposed side edges, and opposed end edges, the bottom half section having opposed interior and exterior surfaces, opposed side edges, and opposed end edges, the top and bottom half sections adapted to have their respective interior surfaces placed in engaging juxtaposition when the mold is assembled, means adapted for orienting and aligning the top section relative to the bottom section and for detachably securing said sections together, each interior surface of each top and bottom section having provided therealong a series of longitudinally aligned spaced apart recesses, each recess being generally ring-shaped and having a boss member projecting through the central portion thereof and terminating at a top surface co-planar with the associated section interior surface, each ring-shaped recess having a semicircular cross-section, each recess in the interior bottom section cooperating with a substantially identically



shaped recess in the interior top section surface to define therebetween when the mold is assembled a doughnut shaped recess having a circular cross-section, each recess adapted to receive therein a casing in a manner draping the casing over the boss member with the peripheral edges of the casing disposed in the recess, and a series of longitudinally aligned spaced apart apertures disposed in the top member and extending therethrough, each aperture in communication with an associated one of the top section recesses, and the casings when placed in the recesses having the casing openings disposed in axial alignment with the associated aperture in the mold top section;

a moving belt conveyor adapted to have the mold longitudinally aligned therewith and rested thereon to be carried therealong;

a stuffing apparatus mounted for reciprocating movement normal to the plane of the mold when resting on the conveyor belt, the stuffing apparatus including a hollow nozzle having a tip end and a top end and being of a diameter adapted to be axially inserted through a mold aperture to gain access to the mold recess with the tip end adapted to engage the casing opening in the mold recess, the top end of the hollow nozzle connected to the bottom end of a tubing having a diameter larger than the nozzle such that the bottom end of the tubing defines an annular shoulder about the nozzle, the tubing shoulder adapted to engage the exterior surface of the top section of the mold to limit the engagement of the nozzle in the mold recess, the tube housing having a hollow compartment defined therein which is in engagement with the hollow nozzle having a passageway formed therein, and a source of pressurized food product connected to the tubing and adapted to deliver food product into the tubing chamber and interconnected nozzle passageway for delivery into the casing in the recess when the nozzle tip is in engagement with the casing opening;

a sealing apparatus including a hollow nozzle having a tip end and an outer end with a cylindrical hollow body member interconnecting said ends, the nozzle member adapted to be axially inserted into a mold aperture to place the nozzle tip end in communication with the opening of the casing disposed in the assoicated recess, the nozzle having a passageway extending therethrough, and a source of pressurized sealant interconnected to the nozzzle and selectively deliverable thereto when the noz-

zle is in engagement with a mold aperture for the spraying of sealant thereout of onto the casing disposed therebeneath in a manner to form an integral patch on the casing to seal the casing opening;

an oven for the coooking of the casings and food products contained therein;

a transporting means for receiving the stuffed and sealed casings from the mold and transporting the same in a manner to be cooked to the oven;

a stripping apparatus operable to engage and sever the casing in a manner to permit separation of the casing from the cooked hot dog, the stripping apparatus including a shaft reciprocal in opposite directions and disposed axially with a stuffed and sealed cooked casing disposed therebeneath, the bottom end of the shaft having a circular frame support member mounted thereto, the frame being concentric with the stuffed casing disposed therebeneath, an electrically energizable heating wire disposed about the outermost peripheral ends of the frame in a manner defining a plane substantially parallel to the plane of the casing disposed therebeneath, the wire being disposed in a circular configuration on the frame with said circular configuration being of a diameter less than the diameter of the casing, the wire adapted to engage the peripheral edge surfaces of the casing upon being brought into engagement thereof by operation of the shaft, the wire severing the casing along the circular line of contact therewith to divide the casing into a top section and a bottom section to permit ease of separation of the casing from the hot dog;

carrying means adapted to receive the sealed casings and cooked hot dogs in a series of aligned spaced apart positions therealong to carry the same to the stripping apparatus and position the same relative to the stripping apparatus for proper engagement thereby of the severing wire; and

means adapted to electrically interconnect the severing wire to a suitable source of electrical energy.

3,857,331

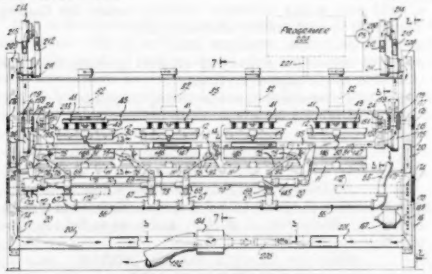
METHOD OF AND APPARATUS FOR MAKING WAFERS

Arthur J. Griner, Wyckoff, N.J., assignor to Nabisco, Inc., New York, N.Y.

Filed Sept. 19, 1972, Ser. No. 290,329

Int. Cl. A21b *5/02*; **A47j** *37/01*

U.S. Cl. 99—373 **47 Claims**



1. Wafer-baking apparatus comprising, a fixedly positioned platen set comprising upper and lower platens, means selectively to advance the platens relatively to each other to form a wafer-shaping cavity therebetween and to separate the platens to permit the removal of the baked wafer from the cavity, means for heating the platens to predetermined desired baking temperatures, means introducible between the separated platens for grasping a wafer on the lower platen and then moving with it from between the platens, a second platen set similar to the first-recited platen set fixedly disposed in alignment therewith and spaced laterally thereof, and means controlling the separation and relative advance of the two platen sets so that the first platen set is closed and baking a wafer when the second platen set is being opened and having its baked wafer removed therefrom, the means for removing a baked wafer from the first platen set when the platens thereof are separated being so constructed and arranged as to remove the wafer from the second platen set when the platens thereof are opened.

3,857,332

APPARATUS FOR THE CONTINUOUS EXTRACTION IN COUNTERFLOW OF POWDERED MATERIALS

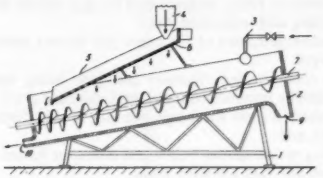
Erik Houghton-Larsen, Fredensborg, and Ole Gronning Kjaergaard, Lyngby, both of Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark

Filed Oct. 30, 1972, Ser. No. 301,926

Claims priority, application Denmark, Nov. 4, 1971, 5410/71

Int. Cl. A47j *31/00*

U.S. Cl. 99—536 **9 Claims**



3. An apparatus as claimed in claim **1**, characterized in that the transport members comprise two conveyor worms with parallel axes and with helical surfaces running in opposite directions.

3,857,333

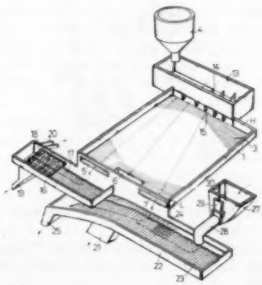
HULLER

Toshihiko Satake, 2-38, Saijyo-cho, Nishihon-machi, Kamogun, Hiroshima-ken, Japan

Filed Apr. 5, 1973, Ser. No. 348,306

Int. Cl. B02b *3/04*; **B07b** *13/08*

U.S. Cl. 99—601 **10 Claims**



1. In a huller comprising: separating means for separating hulled grain from unhulled grain, including:

a separating pan having a rough sorting surface and a supply side and a discharge side, said supply side being elevated above said discharge side;

a first discharge opening for hulled grain located in said discharge side;

a second discharge opening for a mixture of hulled grain and unhulled grain located in said discharge side;

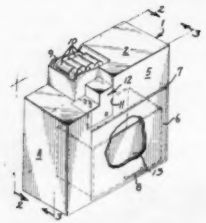
a third discharge opening for unhulled grain located in said discharge side;
said separating pan being further inclined such that said first discharge opening is elevated above second discharge opening and said second discharge opening is elevated above said third discharge opening;
means for reciprocating said separating pan in an obliquely upward direction with reference to the plane of said sorting surface;
means adjacent said supply side for supplying hulled and unhulled grain to said separating surface;
means for removing said hulled grain from said first discharge opening;
means for removing said mixture from said second discharge opening; and
means for removing said unhulled grain from said third discharge opening;
the improvement wherein said means for removing said unhulled grain comprises:
a vibration conveyor integrally mounted at one end thereof to said hulled grain discharge opening, said vibration conveyor being reciprocated by said means for reciprocating said separating pan;
a discharge funnel at the other end of said vibration conveyor;
said reciprocating vibration conveyor being operative to laterally upwardly transfer said unhulled grain from said unhulled grain discharge opening to said discharge funnel; and
hulling means spaced below said discharge funnel to receive and hull said unhulled grain.

3,857,334

APPARATUS FOR CRUSHING CONTAINERS AND DISPENSING TOKENS

Ewald A. Arp, Hopkins, Minn., assignor to Arnold W. G. Larson and Gene S. Moody, both of Minneapolis, Minn., part interest to each

Division of Ser. No. 233,178, March 9, 1972, Pat. No. 3,792,765. This application Oct. 26, 1973, Ser. No. 410,018
Int. Cl. B30b *9/32, 15/30*
U.S. Cl. 100—53 **13 Claims**



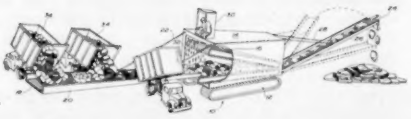
1. Apparatus for crushing containers comprising:
a. a frame structure;
b. a ram including a container-engaging head mounted in said frame structure for predetermined reciprocatory movement;
c. a platen facing said ram head;
d. collapsible means mounting said platen in said frame structure for movement toward and away from a normal operative position facing said ram head at a predetermined distance therefrom;
e. yielding means urging said collapsible means in a direction to normally hold said platen in said operative position thereof with a predetermined pressure greater than the pressure required to crush a given container, the arrangement being such that the bias of said yielding means imparted to said platen will be substantially reduced upon initial collapsing movement of said collapsible means responsive to exertion of ram pressure against said platen greater than said predetermined pressure;
f. container-feeding means for feeding containers successively to the space between said platens and ram head when said ram is moved to a predetermined position remote from said platen;
g. a movable gate element limiting movement of a container delivered to said space;
h. and drive means for imparting movement to said container-feeding means, ram and gate element, for successively feeding a container, moving said ram in a container-crushing direction toward said platen, and moving said gate element out of the path of movement of a container and away from said spaced.

3,857,335

LANDFILL CRUSHER

Allen Wagley, c/o Wendell Coffee, P.O. Box 2036, Lubbock Tex. 79408

Filed Dec. 13, 1972, Ser. No. 314,824
Int. Cl. B30b *15/30*
U.S. Cl. 100—73 **5 Claims**



1. A machine to crush garbage and fill land comprising:
a. a vehicle having front and rear ends and
i. a plurality of ground engaging elements, forming
ii. means to propell itself from one location to another in a direction of travel,
iii. rotary crusher elements that continually move toward one another mounted on said vehicle and extending within the confines of said vehicle forming means for crushing and flattening material therebetween,
b. a belt intake conveyor suspended from the front end of said vehicle adapted to have garbage dumped from trucks thereinto, said conveyor extending in said direction of travel in use,
c. said belt intake conveyor forming means for feeding garbage to said crusher elements, and
d. a belt placement conveyor which
e. forms means for conveying crushed garbage from the vehicle to the land to be filled,
f. said belt placement conveyor being suspended from the rear end of said vehicle.

3,857,336

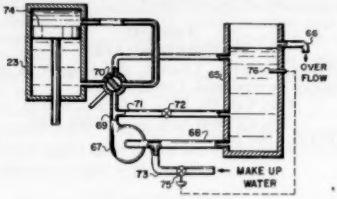
AUTOMATIC FILTERMASS PRESS

Erwin J. Nunlist, Penfield; Lionel J. Pontes, Gates, and Gus M. Irving, Jr., Rochester, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Apr. 26, 1972, Ser. No. 247,755
Int. Cl. B30b *1/32, 9/06*
U.S. Cl. 100—269 **1 Claim**

1. In a filtermass press having a vertically movable ram powered by a double-acting hydraulic cylinder, the improvement comprising a recirculating system for supplying water to said hydraulic cylinder comprising:
a. a reservoir with an overflow that maintains a substantially constant volume of water in the reservoir;
b. a centrifugal pump having its inlet connected to said reservoir;
c. a four-way valve adapted to connect either end of said cylinder to the discharge of said pump, while connecting the other end of said cylinder to said reservoir;

d. a bleed line connecting the pump discharge directly to the reservoir, said bleed line containing flow restricting means, whereby when the ram reaches the end of its stroke, the pump operates a a lower flow rate and produces a higher discharge pressure; and



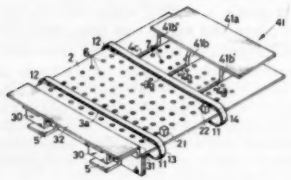
e. a make-up water supply line for supplying water to said system between said reservoir and said pump inlet, an automatic valve in said supply line, and a temperature sensor mounted on said reservoir, said temperature sensor being adapted to open said automatic valve when the temperature in the reservoir exceeds a certain level.

3,857,337

SCREEN PRINT TABLE WITH CONVEYING AND SHEET REGISTERING MEANS

Genzo Tsuji, Saitama; Takashi Sekikawa, and Morio Yamaguchi, both of Tokyo, all of Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1973, Ser. No. 330,976
Claims priority, application Japan, July 10, 1972, 47-68805
Int. Cl. B41f *15/08, 15/20*
U.S. Cl. 101—123 **3 Claims**



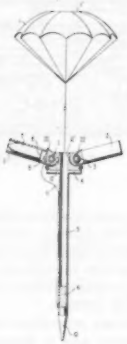
1. A screen printing apparatus comprising a table having a top surface with plurality of apertures, therethrough means connecting each of said apertures with a vacuum source, said table top surface having a plurality of elongated openings, a pair of belt conveyors which are parallel and are provided through said elongated table openings for feeding a sheet material to be printed on said table, first stop means for checking the feeding movement of the sheet material fed onto said table by said belt conveyors, means to move said first stop means vertically, a second stop means provided at one end of said table parallel to said belt conveyors, a diverting means for pushing the sheet material against said second stop means, means for lifting said table to a predetermined printing position with said belt conveyors remaining below the top surface of said table, a screen provided above said table, and a squeegee above said screen and movable in a direction transverse to the feed movement of said belt conveyors, wherein said second stop means is a plate having a flat upper surface whose level is on the same horizontal plane as the upper surface of the sheet material when said table is lifted to said predetermined printing position; said table having a plurality of slots, and said diverting means comprises a flat upper plate and vertical plates attached to said flat upper plate and guided through said slots formed in said table for pushing the sheet material against said second stop means, said flat upper plate having substantially the same thickness as the sheet material, whereby in said printing position the squeegee may move smoothly over the flat surface formed by said upper surface of said second stop means, said upper surface of the sheet material and the upper surface of said flat upper plate of said diverting means.

3,857,338

WARHEAD

Ludwig Bucklisch, Unterach, Austria, assignor to Dynamit Nobel AG, Troisdorf, Germany

Continuation-in-part of Ser. No. 112,379, Feb. 3, 1971, abandoned. This application Oct. 24, 1972, Ser. No. 300,226
Claims priority, application Germany, Feb. 3, 1970, 2004637
Int. Cl. F42b *25/00*
U.S. Cl. 102—4 **12 Claims**



1. An independent weapon unit for use with warheads in bombs, rockets and the like, of the type which accommodate a plurality of independent weapon units in a single warhead; said independent weapon unit comprising: common central connecting means having a centrally disposed longitudinally extending axis, a plurality of launcher tubes connected to said central connecting means, each of said launcher tubes including means for accommodating at least one projectile, descent retarding means connected to said central connecting means for controlling the rate of descent of said weapon unit, and stabilizing means connected to said central connecting means for stabilizing the weapon unit during the descent thereof, said descent retarding means and said stabilizing means being spaced from one another along said longitudinal axis at opposite sides of said central connecting means,

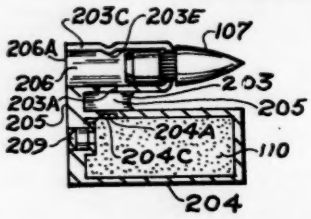
wherein said stabilizing means includes a rigid rod member connected to said central connecting means and a stabilizing weight supported by said rod member at a position spaced from said central connecting means along said longitudinal axis at the side of said central connecting means which is opposite the descent retarding means,

wherein said central connecting means includes an opening therethrough which extends along said longitudinal axis, wherein said descent retarding means includes an opening therethrough which extends along said longitudinal axis when said descent retarding means in a stored condition,

and wherein said rigid rod includes an opening aligned with said openings in said central connecting means and said descent retarding means for accommodating storage of a plurality of said weapon units with insertion of a rigid rod of an adjacent weapon unit into said openings in telescoping relationship to the rigid rod of said weapon unit, whereby a plurality of said weapon units can be stored adjacent one another extending in the direction of said

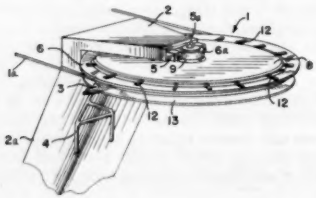
longitudinal axis with the combined length of the stabilizing means of said plurality of independent weapon units in the stored condition being less than the sum of the length of the individual stabilizing means when the independent weapon units are in an operative descent condition.

3,857,339
AMMUNITION AND WEAPON SYSTEMS
Andrew J. Grandy, 2707 Grant Ave., North Hills, Pa. 19038
Filed Mar. 30, 1972, Ser. No. 239,595
Int. Cl. F42b *5/02*
U.S. Cl. 102—38 **102 Claims**



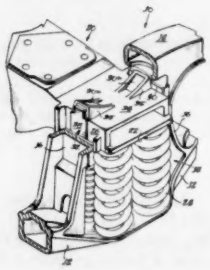
1. An ammunition capsule comprising,
a unitary capsule body having an elongated longitudinally extending cylindrical chamber, said chamber having a forward barrel portion for slidably receiving a projectile and a pressure chamber portion aligned with and rearward of said barrel portion,
a one-piece imperforate propellant capsule chamber which remains imperforate and is integral with and laterally offset from said elongated chamber,
said propellant capsule chamber having metering orifice means for fluidly communicating the propellant capsule chamber with said pressure chamber, and
a primer carried by an exterior surface of said ammunition capsule body for igniting a capsule propellant charge.

3,857,340
RETURN BULL WHEEL AND CABLE CLAMP FOR CABLE-DRIVEN CHAIR LIFT
James C. Wright, Golden, Colo., assignor to Berry Metal Company, Harmony, Pa.
Filed Dec. 20, 1973, Ser. No. 426,747
Int. Cl. B61b *7/04*
U.S. Cl. 104—173 **10 Claims**



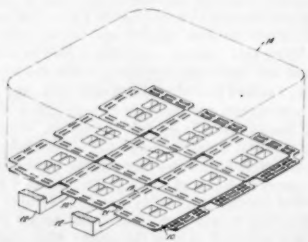
1. A bull wheel construction for receiving a cable or the like thereabout including:
a central hub,
a plurality of spokes extending radially outward from the hub,
a cover in the form of a flanged head disposed over the spokes and connecting with the hub,
an outer peripheral cable receiving portion coupled at the outer periphery of the flanged head, and
said flanged head including a horizontally extending portion generally radially of the hub and a downwardly extending portion generally axially of the hub.

3,857,341
SNUBBED BOLSTER
Otto Walter Neumann, Chicago, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.
Filed Oct. 10, 1972, Ser. No. 295,871
Int. Cl. B61f *5/06, 5/12;* **F16f** *1/06*
U.S. Cl. 105—197 DB **2 Claims**



1. In a railway car truck bolster; the combination of top and bottom walls, spaced side walls interconnecting said top and bottom walls, said spaced side walls defining inboard and outboard sides of a friction shoe pocket, an opening in the bottom wall affording access to said pocket by an associated shoe-actuating spring, a sloping wedge wall having inboard and outboard edges, said wedge wall being integral with said side walls and integral with and extending above said top wall to afford a downwardly facing wedge surface for an associated shoe in said pocket, and a hood integral with said inboard and outboard edges of said wedge wall and with said top wall along said edges, the outer edge of said hood being substantially coplanar with said side walls along their outer surfaces and defining therewith the outer extremity of said pocket.

3,857,342
MODULAR NESTABLE PALLET
Burton A. Johns, Santa Ana, Calif., assignor to John M. Loechner, John K. Griff, Gary J. Griff and Burton A. Johns, Palos Verdes Estates, Calif. a part interest to each.
Filed June 27, 1973, Ser. No. 374,087
Int. Cl. B65d *19/38, 19/12*
U.S. Cl. 108—53 **18 Claims**



1. A pallet module molded from plastic material comprising:
a generally rectangular upper panel;

leg means formed integral with the upper panel and depending from the central portion of the panel;

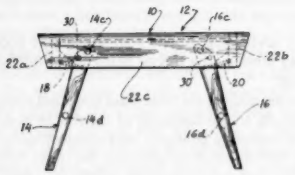
four flanges formed integral with the panel and respectively extending outwardly from the four edges of the panel supported in cantilever fashion; and

means formed on each of said flanges for overlapping and interlocking with flanges of similar modules such that a plurality of modules may be assembled to form a complete pallet, the distance between the outer edge of a flange and said leg means of said module being such that with two modules interconnected there is ample room between the leg means of adjacent modules for a tine of a forklift truck, said interlocking means permitting a complete pallet to be moved as a unit in any position, with or without a pallet load.

3,857,343
FOLDING TABLE

Seymour Greenberg, 213 William St., Lakewood, N.J. 08701

Filed May 10, 1973, Ser. No. 356,439
Int. Cl. A47b *3/00*
U.S. Cl. 108—133 **1 Claim**



1. A folding table, comprising:

a. a table top,

b. a pair of leg assemblies pivotally connected to said table top,

c. said leg assemblies being swingable about their respective pivotal axes between a generally vertical operative position and a generally horizontal inoperative position, and

d. spring toggle means for holding said leg assemblies in either of said positions,

e. said spring toggle means comprising a coiled tension spring,

f. said tension spring being connected at one end to the table top,

g. said tension spring being connected at its opposite end to its associated leg assembly below the pivotal axis thereof,

h. whereby the tension spring moves across said pivotal axis when the leg assembly is pivoted between its said vertical and horizontal positions,

i. each leg assembly comprising a pair of legs and cross-bracing between them,

j. whereby said pair of legs and said cross-bracing constitute an integral unit, integrally movable about a common axis extending through both legs,

k. there being a single spring toggle means connected to said integral unit,

l. the cross-bracing of each leg assembly including a cross-bar which is secured to the upper ends of the two legs of said leg assembly, above its pivotal axis,

m. said cross-bar, pivotal axis and spring connection with the leg assembly defining a three-point isosceles triangle pattern, wherein the pivotal axis represents the apex and the cross-bar and spring connection represent the base angles,

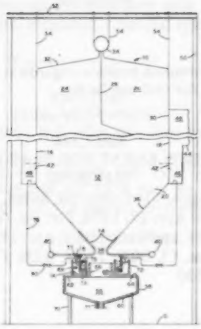
n. said cross-bar being situated adjacent the table top and end members provided adjacent said table top with hand grip cutouts allowing said cross-bar to be engageable by the fingers of one hand when the table top is held by the palm of the same hand,

o. whereby each leg assembly can be manually swung into operative or inoperative position while the table top is held in horizontal position.

3,857,344
FURNACE SEAL

Earl E. Coulter, Akron, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,537
Int. Cl. F23j *1/00*
U.S. Cl. 110—165 R **10 Claims**



1. The combination of a furnace chamber having a bottom outlet, a hopper disposed thereunder and including a top opening spaced from said outlet for receiving discharges therefrom, means for passing combustion gases through said chamber, an improved seal for preventing leakage from between the chamber and hopper and comprising a liquid containing trough extending around the outer periphery of said opening, plate means depending from the furnace bottom and forming an endless skirt extending into the liquid within said trough, shielding means disposed within said trough and comprised of packed material forming a porous construction extending along the inner periphery of the skirt in contiguity therewith, and means introducing a gas into said shielding means to prevent combustion gas infiltration therein.

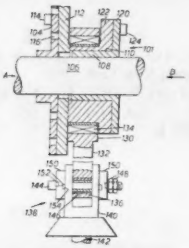
3,857,345
VARIABLE ECCENTRIC AND LOCATING PLATE

John Higgins, Goose Green, England, assignor to The Singer Company, New York, N.Y.

Filed Feb. 14, 1974, Ser. No. 439,481
Int. Cl. D05c *11/06*
U.S. Cl. 112—79 R **6 Claims**

1. In a tufting machine having a drive shaft, a connecting rod operably connected thereto for reciprocating movement, a needle bar drivable reciprocably by said connecting rod, and double eccentric means for regulating the stroke of said needle bar, the improvement comprising a first eccentric rotatable on said drive shaft into any one of a plurality of preselected positions and a second eccentric carried by said first eccentric and rotatable into any one of a plurality of preselected positions relative to said first eccentric to thereby establish the desired stroke for said needle bar, means for locking said first and second eccentrics in fixed relation to each other and in preselected position relative to said drive shaft,

and adjusting means associated with said connecting rod for maintaining the bottom dead centre position of said needle



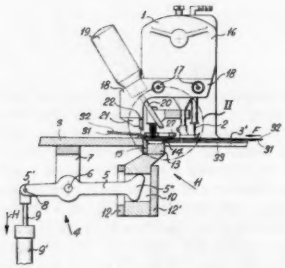
bar at a predetermined position regardless of the variation in stroke effected for said needle bar.

3,857,346

CUTTING IMPLEMENT FOR FLAT-BED SEWING MACHINE

Ruggero Dal Negro, Via Cusani 10, Milan, Italy

Filed Apr. 15, 1974, Ser. No. 461,144
Claims priority, application Italy, Apr. 19, 1973, 23176/73
Int. Cl. D05b *37/04*; B23k *27/00*
U.S. Cl. 112—130 **9 Claims**



1. In a sewing machine for slide fasteners comprising a flat bed provided with a gap and a pair of parallel needles aligned with said gap for straddling two interlinked slide-fastener halves while stitching same onto a workpiece moving along said bed, the combination therewith of:

a fixed cutter blade spacedly disposed above said gap downstream of said needles;

a movable cutter blade confronting said fixed blade in operative alignment therewith;

a support for said movable blade normally withdrawn below the upper surface of said bed;

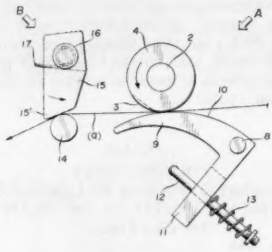
actuating means operable to elevate said support together with said movable blade through said gap for coaction with said fixed blade to sever a slide-fastener section overlying said gap from an adjoining section; and a spring-loaded shoe overhanging said gap above said support between said fixed blade and said needles, said shoe having a bottom surface normally disposed below the level of a cutting edge of said fixed blade but elevatable above said level upon entrainment by said support whereby said overlying section is clamped between said shoe and said support.

3,857,347

SEWING MACHINE

Mitsuo Matsumoto, Tokyo, Japan, assignor to Nara Sewing Machine Industrial Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1973, Ser. No. 342,246
Claims priority, application Japan, June 7, 1972, 47-056050
Int. Cl. D05b *47/04*
U.S. Cl. 112—255 **4 Claims**



1. In a sewing machine: a sewing machine body; means for imparting tension to a thread being fed comprising:

a roller;

means journalling the roller said body and rotating the roller opposite to the direction of the thread being fed;

means defining a generally tangentially proceeding notch in the radially outer periphery of the roller, said notch being of less than circumferential extent, the radial extent of the roller thus being greater angularly beyond the notch than within the notch;

a generally L-shape thread urging member having means defining a convex arcuate surface on one leg thereof;

pin means pivotally mounting the thread urging member on the body, and

means resiliently biasing the thread urging member about the pin means in a sense to bias the convex arcuate surface of the thread urging member into resilient contact with the radially outer periphery of the roller;

the shape and extent of the convex arcuate surface relative to the shape and extent of the radially outer periphery of the roller being such that the convex arcuate surface fails to fully obstruct the notch and defines a gap that is open from one angular extreme of the notch to the other when the notch is presented toward the convex arcuate surface, said gap being sufficient in thickness to permit the thread being fed between the roller and the convex arcuate surface to slip forwards when the notch is presented toward the convex arcuate surface; and

a thread retrogression preventing means comprising:

fixed pin means mounted on said body;

a movable member mounted on said body; resilient means biasing the movable member into resilient engagement with the fixed pin;

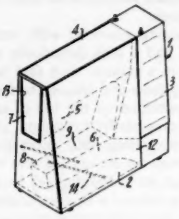
the thread retrogression preventing means being interposed in the path of the thread downstream from the tension imparting means, and positioned to resiliently engage and pass the thread between the fixed pin means and the movable member,

the resiliency provided by the resilient biasing means associated with the movable member being sufficiently strong compared to the resiliency provided by the resilient biasing means associated with the thread urging member, that should the thread become severed downstream from the thread retrogression preventing means during sewing, the latter will prevent the tension imparting means from pulling the thread back upstream through the thread retrogression preventing means and into entanglement with said roller.

3,857,348
SEWING MACHINE

Florian Robert-Nicoud, Cointrin, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed May 23, 1973, Ser. No. 363,242
Claims priority, application Switzerland, June 9, 1972, 8565/72
Int. Cl. D05b 73/10, 77/00
U.S. Cl. 112—258 7 Claims

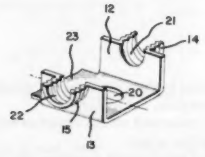


1. In a sewing machine comprising a frame including a base, a pillar, an upper arm, a head and a free arm, the improvement comprising three adjacent panels hinged to each other along their facing edges and cooperating with said frame to provide a protective case for the machine for storage, the edges of the front face of the head being of a shape substantially corresponding to the edges of the upper face of the free arm, one of said panels having a cut-out area the edges of which surround the edges of the front face of the head when the panels are in a storage position, said panel having the cut-out area disposed between said other two panels, the edges of said cut-out area surrounding the edges of the upper face of said free arm when said panels are in a position permitting use of the machine, said panel with the cut-out area then providing, in cooperation with the upper face of said free arm, a widened work surface.

3,857,349
METHOD FOR FABRICATING A THREADED TAP BY STAMPING

James Pritulsky, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 19, 1973, Ser. No. 380,921
Int. Cl. B21d 53/24
U.S. Cl. 113—119 6 Claims



1. A method for forming an electrical terminal having a cylindrically shaped element with internal and external threads thereon from a continuously fed supply of flat stock material and comprising the steps of:

feeding a predetermined section of said flat stock material into at least one given work area containing cutting and forming dies;

cutting the predetermined section of flat stock into a shape having thereon first and second rectangularly shaped tabs of equal shape and positioned such that corresponding lines of each rectangularly shaped tab are symmetrical mirrored about a centerline lying therebetween;

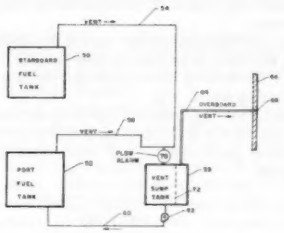
forming corresponding portions of each tab into curved surfaces which are mirrored images of each other about said centerline to define a pair of truncated, half cylinders, with a first end of each half cylinder being integrally secured to the remainder of said section of flat stock and the second end thereof terminating in a plane substantially normal to the longitudinal axis of said half cylinder; cold working the half cylinders to form threads thereon; and

folding said half cylinders towards each other through a predetermined arc and about folding lines located in said remainder of said section and bisecting those portions of said remainder of said section of said flat stock lying between said centerline and the junctions of said tabs and said section so that the concave surfaces of each of said half cylinders approach each other and the corresponding longitudinal edges of each half cylinder are spatially positioned substantially coincident with each other to form a complete, truncated, threaded cylinder.

3,857,350
FUEL VENT TANK

James E. Rohan, 3101 N.E. 47th Ct., Fort Lauderdale, Fla. 33308

Continuation of Ser. No. 328,326, Jan. 31, 1973, abandoned.
This application Feb. 13, 1974, Ser. No. 442,042
Int. Cl. B63b 17/00; F16k 37/00; G01p 13/00
U.S. Cl. 114—.5 R 2 Claims



1. In a marine vessel having a hull and a fuel storage tank, the improvement comprising:

fuel filling access means connected to said fuel storage tank;

fuel vent sump tank;

fuel storage tank overflow conduit connected in liquid flow communication at one end to said fuel storage tank which receives fuel when said fuel storage tank is filled beyond capacity and at its opposite end to said fuel vent sump tank;

an overboard fluid pressure vent line connected at one end to said sump tank and at its opposite end through said vessel hull, venting to the outside atmosphere;

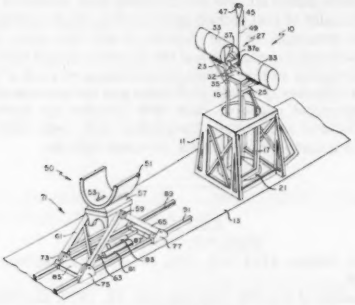
liquid flow sensing means connected in fluid communication with said fuel storage tank overflow conduit for sensing a flow of liquid in said overflow conduit; and

liquid flow indicating alarm means connected to and initiated by said flow sensing means for indicating liquid flow within said fuel storage tank overflow conduit to a human being.

3,857,351
SUBSURFACE SUBMERSIBLE MATING SYSTEM

John F. Wynn, Jr., Landover, Md., and Clifford F. Trowbridge, Martinez, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1971, Ser. No. 128,104
Int. Cl. B63g 8/40
U.S. Cl. 114—16.4 **10 Claims**



1. A subsurface submersible system for mating with and deploying a vehicle from a submerged carrier vessel, comprising:

a forward portion having means for connecting to a submerged vehicle and a support structure mounted to the upper deck of the carrier;

means for extending said connecting means in a vertical plane away from the upper deck of the carrier and for forcing the submerged vehicle, when engaged with said connecting means, down towards the upper deck of the carrier;

a stern portion comprising a means for receiving and holding the stern of said submerged vehicle;

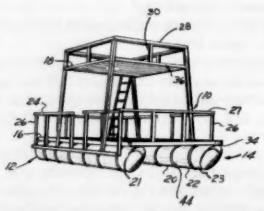
means for locking said submerged vehicle to said stern receiving means; and

means for moving said stern receiving means along the deck of the carrier and for moving said receiving means in a vertical plane towards and away from the deck of the carrier.

3,857,352
PONTOON BOAT

Lawrence A. Schott, 13930 Stansbury, Detroit, Mich. 48227

Continuation-in-part of Ser. No. 282,963, Aug. 23, 1972, abandoned. This application Aug. 29, 1973, Ser. No. 392,675
Int. Cl. B63b 1/12, 3/08
U.S. Cl. 114—61 **3 Claims**



1. A pontoon boat comprising:

a pair of substantially parallel pontoons each made of a plurality of water-tight drums axially aligned in end-to-end alignment, each of said drums having a peripheral flange with a radial extending portion at each end thereof;

a ring clamp for clamping together the two juxtaposed flanges of two abutting drums, said ring clamp having side flanges disposed at a diverging angle for forcing said peripheral flanges of said abutting drums axially toward each other; and

a superstructure attached to said ring clamp;

wherein said ring clamp comprises:

a middle substantially flat portion in a spaced apart parallel relationship from said juxtaposed flanges of abutting drums, said side flanges extending inwardly from each side of said middle portion of said ring clamp and intersecting said middle portion at an angle of between 50 and 70 radial degrees;

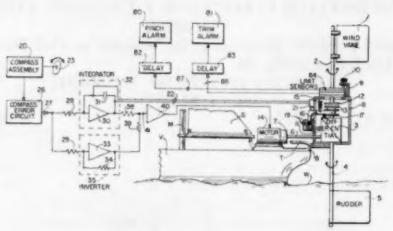
a segmental opening provided with outwardly extending radial flanges and a bolt threadedly engaged with said radial flanges in a manner such that turning of said bolt respectively tightens and loosens said ring clamp;

a first means positioned on the top of said ring clamp for securing a horizontally extending structural element thereto for supporting said superstructure, a second means positioned on the inward side of said ring clamp, displaced about 90 radial degrees from said first means and adapted to secure a first vertically extending structural element thereto for supporting said superstructure, and a third means positioned on the outward side of said ring clamp, displaced about 70 to 75 radial degrees from said first means and adapted to secure a second vertically extending structural element thereto for supporting said superstructure, wherein said first, second, and third means comprise an outwardly extending conical protrusion on said ring clamp extending through a receiving aperture in said respective structural element and an axially aligned aperture through said conical protrusion adapted to receive a bolt therethrough.

3,857,353
SAILING VESSEL SELF-STEERING SYSTEM

George R. Mounce, 18 Bridle Path, Willowdale, Ontario M2L 1C8, Canada

Filed Feb. 5, 1974, Ser. No. 439,738
Int. Cl. B63n 25/00, 25/04
U.S. Cl. 114—144 C **10 Claims**



1. A self-steering system for a sailing vessel having a rudder and having a compass, comprising:

a. a wind vane mounted on the vessel to sense and follow the direction of the wind;

b. a differential mechanism coupling the wind vane directly with the rudder so that the wind vane and the rudder move so as to balance turning forces acting on the vane and the rudder, said differential mechanism further including adjustment means for selectively adjusting the angular relationship between the rudder and the vane;

c. compass sensor means settable to sense deviations of the vessel's heading from a preset compass heading and operative to deliver error signals representative of the sense and magnitude of such deviations; and

d. servo circuitry coupled to said sensor means and to said adjustment means and responsive to said error signals to adjust said mechanism to alter said angular relationship such that the pressure of the wind on the vane will move

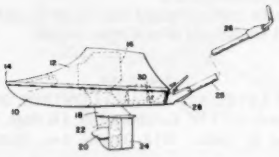
the rudder to reduce the magnitude of the error signals toward zero.

3,857,354

CHASSIS FOR WATER-SKI TOWING DEVICE

Miroslav Uroshevich, 2505 Fleetwood Ave., Cincinnati, Ohio 45211

Filed Oct. 12, 1973, Ser. No. 405,895
Int. Cl. A63c *11/10*; B62d *25/00*
U.S. Cl. 115—6.1 **14 Claims**



1. A water-ski towing device comprising:

a buoyant hull having a floor and an aft transom extending out of the plane of the said floor, the configuration of said floor including a recess for accommodating the passage of an engine shaft;

a unitary structural chassis positioned in said hull, said chassis having a forward engine mounting section, an elongated fore and aft extending base section, and an aft mounting pad, said sections having a configuration complementary to a portion of said hull, said portion including said recess, said aft mounting pad having a configuration complementary to said aft transom;

means for securing said chassis and said hull; and

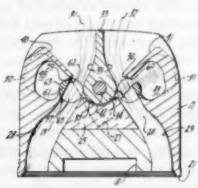
an operator tow bar assembly secured to said aft mounting pad through said transom.

3,857,355

MARINE JET DRIVE PROPULSION APPARATUS

William L. Woodfill, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 21, 1972, Ser. No. 317,200
Int. Cl. B63h *11/10*
U.S. Cl. 115—12 R **27 Claims**



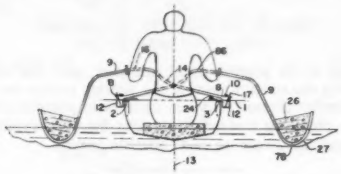
1. A directional thrust control system for a jet propulsion means for propelling of a marine device comprising a housing means having a central wall and outer walls forming a pair of separate jet nozzle means and establishing a pair of individual jets, said central wall preventing lateral flow from the one jet nozzle means to the opposite jet nozzle means and having a common directional control means for said pair of individual jets forming a portion of said central wall including the opposite inner walls of said central wall, said nozzle means having angularly oriented wall means angularly directing said individual jet streams toward each other and into engagement with the inner walls of said control means, said control means being rotatably mounted for selective angular orientation between said jets and including an inner portion movable to maintain said central wall and the separate jet nozzle means with the inner walls being angularly reoriented whereby said individual jets are individually maintained for all positions of said control means and move along the corresponding surface of the control means and are redirected as relatively rectilinear straight line jets with the control means located in a first position therebetween, and rotation of said control means from said first position causing a complete one of the jets to increasingly deflect laterally as a result of engagement with the control means while the opposite complete jet is allowed to exit generally increasingly closer to the predirected line.

3,857,356

FRONTWARD-ROWING BOAT SPANNING ANGULAR OARS HAVING SELF-SURFACING BLADES

Harold A. Jewett, 5451 42nd St. N.W., Washington, D.C. 20015

Filed July 27, 1973, Ser. No. 383,379
Int. Cl. B63h *16/04*
U.S. Cl. 115—24.1 **21 Claims**



1. A rowing oar formed of metal tubing and terminating in a blade-end portion comprising a throat and a cradle segment having an upwardly divergent cross-sectional contour,

Said blade-end portion also comprising a slab-shaped blade whose thickness is both less than its breadth and less than its length,

Said blade being carried by said cradle segment,

The outer terminal portion of such cradle segment consisting of an upwardly angled extension of the bottom portion of such cradle segment,

The throat end of such cradle segment and the upper end of said outer terminal portion constituting a cradle mouth for reception of said blade when fed directly therethrough into seating engagement on said cradle segment,

The throatward, bottom and outward edge surfaces of said blade containing a peripheral trough defined by walls complementary to said upwardly convergent cross-sectional contour,

Said blade being secured in place by close juxtaposition of said walls to side portions of said bottom portion of said cradle segment.

3,857,357

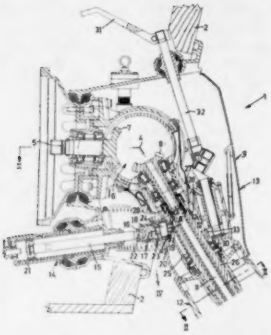
TORQUE COMPENSATING MECHANISM FOR BOAT DRIVES

Karl Abdon Bergstedt, Gothenburg, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

Filed Apr. 17, 1973, Ser. No. 352,063
Int. Cl. B63h *5/12*
U.S. Cl. 115—41 R **22 Claims**

1. In a boat propulsion system wherein a propeller housing is mounted on the stern of a vessel, pressure means mounted between said stern and said housing for tilting and trimming said housing in a vertical plane, said housing when untilted and in operation having a downwardly extending power transmitting intermediate shaft around which a portion of said housing is rotatable for steering and another portion of said housing is non-rotatable, a mechanism for counteracting undesired torques on said rotatable portion comprising: a pressure element disposed for engagement by said pressure means mounted on said non-rotatable housing portion for axial

movement of said element therein, a cam carried on said rotatable housing portion, said cam being operatively associated with said pressure element for movement of said element with respect to said non-rotatable housing portion corresponding to the positioning of said cam, said cam laterally displacing the contact point of the bearing surface on which the propeller pressure is taken up by said pressure element thereby providing a steering moment for compensating for said undesired torque on said rotatable portion.



3,857,358

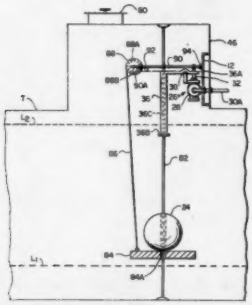
FLUID LEVEL ALARM AND CONTROL DEVICE

John T. Ward, 6279 W. Rockburn Hill, Elkridge, Md. 21227, and Allen B. Keller, 2914 Ontario Ave., Baltimore, Md. 21234

Division of Ser. No. 370,548, June 15, 1974, Pat. No. 3,807,899. This application Nov. 27, 1973, Ser. No. 419,361

Int. Cl. G01f *23/00*

U.S. Cl. 116—110 **4 Claims**



1. An audible alarm device for detecting and signalling the advent of a leakage condition in a fluid storage tank, comprising:

a source of dry nitrogen gas under pressure;

gas operated audible means external of said storage tank;

pneumatic valve means mounted internally of said storage tank including pneumatic pressure line interconnecting opposite sides of said valve means with said source and said audible means, respectively;

float means mounted internally of said storage tank, interconnected with said valve means, and responsive to predetermined fluid levels representing the advent of a leakage condition in said storage tank to actuate said valve means to transmit gas from said source through said pneumatic lines to sound said audible means, said float means in said tank being mounted for slidable movement on vertical rod means in response to varying fluid levels in said tank;

an operating plunger for said valve means;

lever means pivotally mounted at a first end thereof adjacent said valve mans and having reel means mounted on a second end thereof, said lever means being constrained to engage and depress said plunger when pivoted downwardly about said first end;

disc means mounted for vertical movement on said rod below said float and being adapted to engage said float in response to said second fluid level corresponding to a leakage condition; and

cable means connecting said disc means to said reel means on said second end of said lever means.

3,857,359

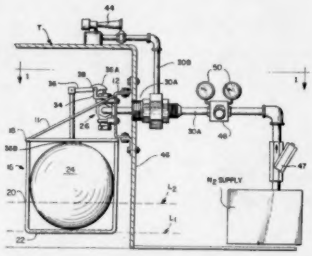
FLUID LEVEL ALARM AND CONTROL DEVICE

John T. Ward, 6279 W. Rockburn Hill, Elkridge, Md. 21227, and Allen B. Keller, 2914 Ontario Ave., Baltimore, Md. 21234

Division of Ser. No. 370,548, June 15, 1973, Pat. No. 3,807,899. This application Nov. 27, 1973, Ser. No. 419,362

Int. Cl. G01f *23/00*

U.S. Cl. 116—110 **21 Claims**



1. An audible alarm device for detecting and signalling the advent of an overflow condition in a fluid storage tank, comprising:

a source of dry nitrogen gas under pressure;

gas operated audible means external of said storage tank;

valve means mounted internally of said storage tank including pneumatic pressure lines interconnecting opposite sides of said valve means with said source and said audible means, respectively; and

float means mounted internally of said storage tank, interconnected with said valve means, and responsive to a predetermined fluid level representing the advent of an overflow condition in said storage tank to actuate said valve means to transmit gas from said source through said pneumatic lines to said audible means, said float means including a float in said tank, a fluid pervious float cage containing said float and constraining the same to a limited vertical displacement in response to varying fluid levels in said tank, and linkage means extending from said float cage to said valve means for actuating said valve means, said float rising in said float cage and engaging said linkage means in response to said predetermined fluid level to constrain said linkage means to actuate said valve means and effect actuation of said audible means;

pivot means on said valve means;

an operating plunger for said valve means; and

a bell crank lever pivoted intermediate the ends thereof on said pivot means;

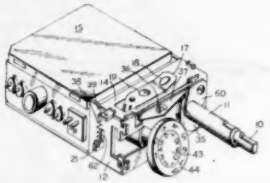
said bell crank lever being rigidly affixed to said float on one end thereof and means engaging said operating plunger on the other end thereof.

3,857,360

UHF CHANNEL INDICATING MECHANISM

Hirohiko Tonari, Kyoto; Satoshi Kitaichi, and Masaru Imai, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Claims priority, application Japan, June 18, 1971, 46-44400
Filed June 14, 1972, Ser. No. 262,469
Int. Cl. N03j 1/02
U.S. Cl. 116—124.2 3 Claims



1. A channel indicating mechanism for a UHF tuner having a tuner control shaft adjustable to tune said UHF tuner to any one of the UHF television channels and tuning means having a tuning shaft coupled to and driving said tuner control shaft through a series of rotational steps of predetermined angles and a fine tuning shaft coupled to and continuously rotating said tuner control shaft a small rotational angle within the angle of any angular step, said indicating mechanism comprising:

a detent element mounted on said tuning shaft and having a plurality of gear teeth on the periphery thereof;

spring loaded deten means engaged between adjacent teeth of said detent element so as to impart a click motion during rotation of said tuning shaft; and

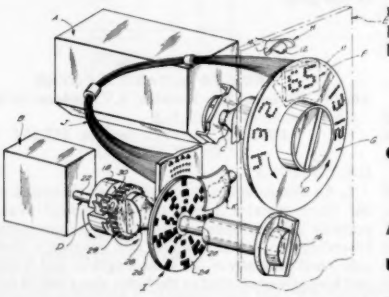
channel indicating means with which said detent element teeth are meshed and driven step-by-step by said tuning shaft through said detent element upon rotation of said tuning shaft under the control of said detent means for indicating the channel to which the UHF tuner is tuned.

3,857,361

COMBINED VHF AND UHF DISPLAY SYSTEM

Richard D. Gibson, Wilbraham, and Robert D. Whelan, West Springfield, both of Mass., assignors to General Instrument Corporation, Newark, N.J.

Filed Dec. 19, 1973, Ser. No. 426,331
Int. Cl. H03j 1/04
U.S. Cl. 116—124.4 9 Claims



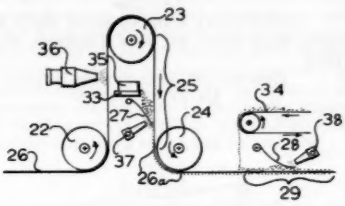
1. A channel indicia display system for use in television tuners or the like of the type having first and second frequency band tuners and separate rotary control shafts to condition each of the tuners, the display comprising a stationary mask having a transparent portion, a first movable mask having a plurality of active portions and a passive portion, said first mask being operably connected to one of the shafts to be driven thereby and means illuminating said first movable mask such that the portion thereof aligned with the transparent portion of said stationary mask is visible, a second movable mask, said second movable mask operably connected to the other of the shafts to be driven thereby, a fiber optic bundle having a light input end and a light output end, said light input end being situated adjacent said second mask and said light output end being situated in alignment with said transparent portion of said stationary mask with said first movable mask interposed therebetween, means for directing light through said second movable mask to said light input end, and switch means for de-energizing said illuminating means and energizing said light directing means when said passive portion of said first movable mask is aligned with said transparent portion of said stationary mask.

3,857,362

METAL POWDER COATING APPARATUS

Donald Herbert Brooks, P.O. Box 816, Vanderbijlpark, South Africa

Filed May 23, 1972, Ser. No. 255,989
Int. Cl. B44d 1/00, 1/094
U.S. Cl. 118—59 3 Claims



1. Apparatus for coating a metal article which comprises a flexible acting wiper blade, means adapted to locate a metal surface of said article to be coated adjacent the blade, so that the leading edge of said blade may press lightly against the surface, heating means for the metal surface of said article located adjacent thereto, means adapted to cause a relative wiping movement between the blade and the surface, means adapted to put a thermoplastic flowable powder coating blend onto the surface, the blade being at an acute angle with the surface to be coated in that direction to form a wedge shaped trough for the powder, and means for cooling the blade, the metal surface and the coating, said cooling means located proximate to the locus of connection between the blade, the powder, and the metal surface.

3,857,363

DEVICE FOR THE MIST LUBRICATION OF DIES FOR SINTERING

Guiseppe Ferlito, Ivrea, Italy, assignor to Ing. C. Olivetti & C. S.p.A., Ivrea (Torino), Italy

Filed July 16, 1973, Ser. No. 379,895
Claims priority, application Italy, Aug. 14, 1972, 69640/72; Aug. 31, 1972, 69779/72
Int. Cl. B05c 7/02
U.S. Cl. 118—300 5 Claims

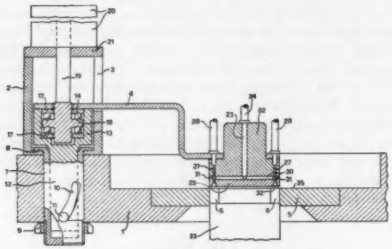
1. A device for lubricating the walls of a mould cavity of press dies for forming sintering blanks, said press having a parking remote position and an operative position adjacent the mould cavity comprising:

a die-carrying plate having a coupling element,

means for creating a mist of lubricant in air,

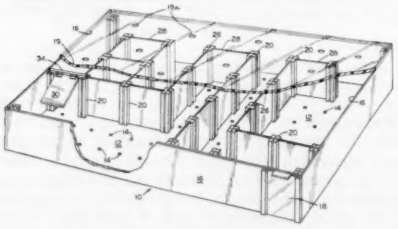
an arm having one end mounting said creating means and another end having a pivot coupled to said coupling element,

means for simultaneously turning the arm about said pivot and for moving said other end of the arm along said



coupling element, whereby said creating means are moved along a helical arc between said parking position and said operative position.

3,857,364
ADJUSTABLE ANIMAL MAZE DEVICE
Frederick Henry Miller, Jr., 3884 Kingsberry, Nassau, N.Y. 12123
Filed Mar. 30, 1973, Ser. No. 346,315
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **13 Claims**



1. An animal maze device comprises a floor unit having a plurality of holes therein,

means to form a maze structure of selected pattern on said floor unit to provide pathways thereon,

maze periphery walls structurally engageable with said floor unit to encircle said maze structure,

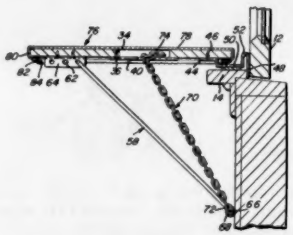
said means to form a maze structure including a plurality of discrete wall panels and wall panel support means, said panels being structurally engageable with said panel support means,

said panel support means being removably engageable with selected ones of the holes in said floor unit, whereby upon such engagement of said support means with selected ones of said holes, and upon such structural engagement of said wall panels with hole-engaged support means, said wall panels cooperate one with the other and with said panel support means to form said maze structure upon said floor unit,

apertures provided at the upper ends of said wall panel support means to removably receive and support an accessory support means whereby a movable obstruction may be positioned by said posts within a pathway, and

closeable access means to provide access for a small animal into said maze structure.

3,857,365
WINDOW MOUNTED PLATFORM
Paul H. Mueller, P.O. Box 654, Ferndale, Calif. 95536
Filed Aug. 8, 1973, Ser. No. 387,214
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **8 Claims**

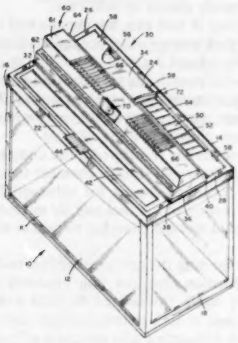


1. A multipurpose panel designed for indoors attachment to and use in conjunction with a window structure embodying a vertical window and a complemental horizontal sill, said panel being adapted to occupy an elevated plane overhanging a room floor, constituting a shelf-like platform, and being usable as a reclining platform for a household pet, a cat for example, a readily applicable and removable comfortable and washable cover spread tautly and overlying the top surface of said platform, said cover having marginal edges fittingly encompassing coacting edges of said panel and having an elastic-equipped-hem snugly and retentively bordering said marginal edges and holding the cover in a given usable position, a stabilizing prop having an upper end attached to an underneath inward edge portion of said panel and a freely positionable lower end adapted to be propped and braced against a vertical wall surface below the plane of said sill, and bracket means secured to an underneath surface of an outwardly positionable edge portion of said panel and detachably but supportively and usably cooperable with portions of the window and sill, respectively, and prop retaining means having an upper end detachably and adjustably connected to a median underneath surface of said panel and a lower end fastened to the lower end of said prop.

3,857,366
HINGED AQUARIUM COVER
Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed Feb. 16, 1973, Ser. No. 333,193
Int. Cl. A01k *64/00*
U.S. Cl. 119—5 **13 Claims**

1. An aquarium cover comprising an elongated plastic planar frame member having two longitudinal weakened line portions and an opening therein; light transmitting means extending across and covering said opening; a first elongate side panel generally of the same length as said frame member and hingedly connected to the latter along one of said longitudinal weakened line portions; a second elongate side panel generally of the same length as said frame member and hingedly connected to the other of said longitudinal weakened line portions, said panels being arranged to be placed in extended positions wherein said panels are co-planar with said frame member; said panels also being arranged to be placed in folded positions wherein said panels are disposed adjacent the planar surface of said frame member in substantially coex-

tensive relation thereto, whereby the cover is adapted to cover an aquarium in the extended positions of said panels while the



cover can be conveniently stored and shipped in the folded positions of said panels.

3,857,367

BOILER

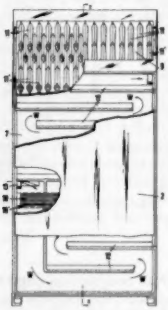
Gerardus Johannes Giesen, Tegelen, Netherlands, assignor to Beondu A.G., Vanduz, Liechtenstien

Filed May 21, 1973, Ser. No. 362,414

Claims priority, application Netherlands, May 23, 1972, 7206921

Int. Cl. F22b *37/10*

U.S. Cl. 122—367 R **10 Claims**



1. A boiler comprising

a vertically extending outer wall,

a burner means,

two vertically extending heat conducting elements secured parallel to and at a distance inside of said outer wall,

a fire duct defined between said heat conducting elements, said burner means being located in said fire duct, and

water ducts extending between said heat conducting elements and said outer wall for circulating a heat transfering medium therethrough,

each of said heat conducting element being a single separately cast piece of light metal.

3,857,368

IGNITION SYSTEM OF ROTARY PISTON ENGINE

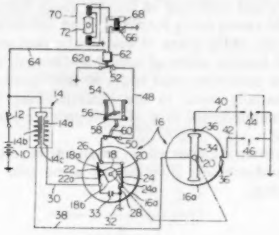
Kyuji Kishimoto, and Hiraki Sawada, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Mar. 30, 1973, Ser. No. 346,318

Claims priority, application Japan, Mar. 31, 1972, 47-38208; Mar. 31, 1972, 47-38209

Int. Cl. F02b *53/12*

U.S. Cl. 123—8.09 **5 Claims**



1. In an ignition system for a rotary internal combustion engine having two rotary engine units including two ignition plugs carried by the two rotary engine units respectively, and an ignition circuit for said two ignition plugs including two sets of contact points for the two ignition plugs respectively opening at predetermined timing positions for the respective plugs, the improvement wherein said system further comprises means for disabling one of said two set of contact points when said engine operates during engine braking condition.

3,857,369

ROTARY PISTON ENGINE WITH AUXILIARY CHAMBER ON ITS CASING

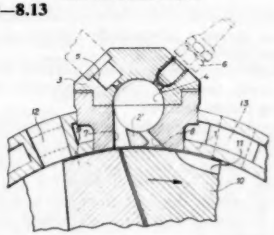
Huschang Sabet, Eduard-Pfeiffer-Strasse 67, 7 Stuttgart 1, Germany

Continuation-in-part of Ser. Nos. 137,870, April 27, 1971, Pat. No. 3,376,080, and Ser. No. 284,896, Aug. 30, 1972, Pat. No. 3,779,215. This application Mar. 13, 1973, Ser. No. 340,645

Claims priority, application Germany, Mar. 22, 1972, 2213965The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.

Int. Cl. F02b *53/10*

U.S. Cl. 123—8.13 **3 Claims**



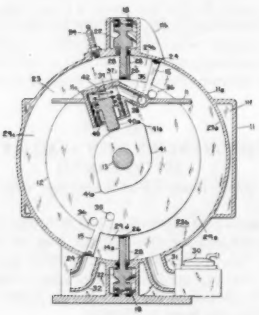
1. In a rotary-piston, internal-combustion engine having an axis, a casing bounding a cavity of circular cross section about said axis, two pairs of pistons mounted on said cavity for simultaneous rotation about said axis, each piston having a circumferential face sealingly engaging said casing during said rotation, one of said pairs rotating at uniform angular speed and the other pair rotating at cylically varying angular speed during operation of said engine, each piston of said one pair being interposed angularly between the pistons of the other pair and said circumferential face thereof having a circumfer-

ential width greater than the corresponding dimension of the pistons of the other pair, whereby chambers of cyclically varying volume are bounded by said pistons in said casing, said circumferential faces of the pistons of said one pair being each formed with two axially spaced, radially open grooves circumferentially open in respective opposite circumferential directions, said casing being formed with an intake port and an exhaust port in axially spaced respective radial planes for communication with said grooves respectively during operation of said engine, the improvement which comprises:

a. an auxiliary chamber mounted on said casing outside said cavity and enclosing an interior space therein,
   1. said casing being formed with an aperture substantially in the radial plane of said intake port and connecting the interior space of said chamber with said cavity,
   2. the circumferential width of said aperture being substantially equal to the corresponding width of said circumferential face of each piston of said other pair; and

b. a partition member axially extending in said aperture and circumferentially dividing the same into two separate openings.

3,857,370
ROTARY INTERNAL COMBUSTION ENGINE
Wayne A. Hemenway, Rt. No. 4, Edgerton, Wis. 53534
Filed Aug. 23, 1973, Ser. No. 391,155
Int. Cl. F02b *53/06*
U.S. Cl. 123—8.33 **2 Claims**



1. A rotary internal combustion engine comprising;

a. a case having a substantially cylindrical cavity and a storage chamber therein;

b. a substantially cylindrical rotor rotatably mounted within said cavity, said rotor having a plurality of radially extending pistons thereon;

c. an annular abutment disk rotatably mounted within said case on an axis of rotation substantially transverse to the axis of rotation of said rotor, said disk having a central opening within which said rotor fits and at least one opening radially disposed from said central opening to allow the passage of said pistons through said disk as said rotor rotates;

d. means for synchronously transmitting the rotation of said rotor to said disk;

e. said rotor and pistons thereon and said disk being in slidable sealing engagement with the walls defining said cylindrical cavity to form an expanding intake chamber, a contracting compression chamber, an expanding combustion chamber, and a contracting exhaust chamber when said disk is blocking said cylindrical cavity;

f. means for supplying a fuel and air mixture to said intake chamber, said fuel and air mixture being transferred to said compression chamber for compression therein upon passage of said pistons through said disk;

g. a plurality of passageways in said rotor, one passageway for each of said pistons, each of said passageways having one end which is located rotationally ahead of the one of said pistons and is in communication with said cylindrical cavity, the other end of each of said rotor passageways being normally closed by said case;

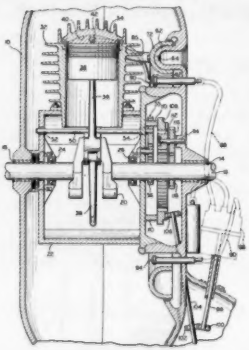
h. a passageway in said case having one end in communication with said storage chamber, and a second end which is normally closed by said rotor but is periodically in communication with the ends of said rotor passageways as said rotor rotates to thereby transfer the compressed fuel and air mixture from said compression chamber to said storage chamber;

i. transfer means for transferring the compressed fuel and air mixture from said storage chamber to said combustion chamber including means for substantially maintaining the compression of the fuel and air mixture during transfer from said storage chamber to said combustion chamber;

j. means for igniting the compressed fuel and air mixture in said combustion chamber, the products of combustion therefrom being transferred to said exhaust chamber upon passage of said pistons through said disk; and

k. means for exhausting said products of combustion from said exhaust chamber.

3,857,371
ROTARY INTERNAL COMBUSTION ENGINE
Troy W. Gibson, 74 Milan Ave., Norwalk, Ohio 44857
Filed June 4, 1973, Ser. No. 366,723
Int. Cl. F02b *57/00*
U.S. Cl. 123—44 R **7 Claims**



1. A rotary internal combustion engine comprising:

a crankshaft journaled for rotation about an axis;

a crankcase journaled for rotation about the axis of said crankshaft and encompassing a portion of said crankshaft;

cylinder means radially mounted on said crankcase in spaced relation about said crankshaft;

a reciprocating piston disposed within each of said chlinder means and coupled with said crankshaft for driving the same in one direction upon reciprocation of said pistons in said cylinders and said crankcase and cylinders in an opposite direction, whereby said pistons alternately compress an explosive mixture in each cylinder and are displaced by explosion of the compressed mixture therein;

gear means drivingly interconnecting said rotating crankcase to said crankshaft whereby when said pistons impart rotary motion to said crankshaft, said gear means trans-

mits synchronized rotary motion to said crankshaft from said crankcase; and

a stationary outer housing within which said crankshaft is journaled and wherein said outer housing contains diametrically opposed inlet ports.

3,857,372

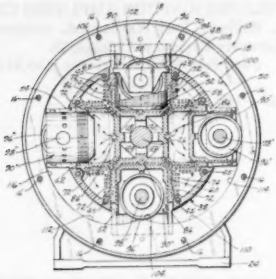
ROTARY INTERNAL COMBUSTION ENGINE

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Continuation-in-part of Ser. No. 286,189, Sept. 5, 1972,. This application Oct. 26, 1972, Ser. No. 301,096

Int. Cl. F02b *57/00*

U.S. Cl. 123—44 E **33 Claims**



1. A rotary internal combustion engine comprising,

an engine frame means having a rotatable shaft extending outwardly therefrom,

a rotor means mounted on said shaft for rotation therewith, a plurality of cylinders mounted on said rotor means,

a piston movably mounted in each of said cylinders and being movable between compression and expansion positions with respect thereto,

a cam plate means on said frame means extending around said rotor means and having a cam surface,

a roller means mounted on each of said pistons which engages and rolls upon said cam surface to cause said piston to be moved in said cylinder as said rotor means is rotated with respect to said cam plate,

said cam surface being generally circular but having at least one lobe provided thereon which extends towards said rotor means, said lobe having a flattened portion thereon to provide a dwell time for said piston during firing each of said pistons being moved to its maximum compression position as the roller means thereon engages said lobe,

supply means for supplying air and fuel to said cylinders,

and means for exhausting the exhaust gases from the engine after the fuel and air mixture has been ignited by the compression thereof.

3,857,373

VACUUM DELAY VALVE

Frank J. Martin, and Rex R. Holbrook, both of Ann Arbor, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 1, 1972, Ser. No. 311,090

Int. Cl. F02p *5/04*

U.S. Cl. 123—117 A **5 Claims**

1. A vacuum delay valve comprising:

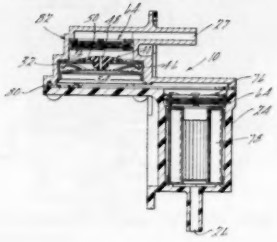
a housing defining an enclosed chamber having at least two ports therein;

plate means having an aperture therein and supported within said chamber for dividing said chamber into first and second separate pressure chambers each of which chambers has a port connected thereto for fluid communication therewith;

unidirectional valve means located within said aperture for sealing said aperture from fluid communication between said chambers when the vacuum in the first chamber is greater than the vacuum in the second chamber and operable for conducting fluid communication between said chambers when the vacuum in second chamber is greater than the vacuum in the first chamber;

a delay valve means located in said plate means and controlling the rate of fluid communication between said chambers when the vacuum in the first chamber is greater than the vacuum in the second chamber; and

filter means positioned between said plate means and each of said ports and comprising:



a first filter member for dispersing the fluid flow therethrough and trapping large dirt particles travelling in the fluid;

a second filter member positioned for receiving the fluid flow from said first filter member for removing dirt particles larger than a predetermined size travelling in the fluid between said first member and second filter member;

a third filter member positioned for receiving the fluid flow from said second filter member for removing dirt particles larger than a predetermined size travelling in the fluid between said second filter member and the third filter member; and

a housing member for retaining said first, second and third filter members in a unitary structure.

3,857,374

LIQUID FUEL INJECTION PUMPING APPARATUS

Paul Edgar Glikin; Zdzislav Stanislav Miracki, both of London, and Ronald Phillips, Northolt, all of England, assignors to Simms Group Research & Development Limited, London, England

Filed June 21, 1973, Ser. No. 372,494

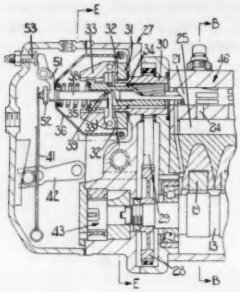
Claims priority, application Great Britain, July 13, 1972, 32776/72

Int. Cl. F02d *1/12*

U.S. Cl. 123—139 AP **6 Claims**

1. A liquid fuel injection pumping apparatus comprising in combination, an injection pump adapted to be driven in timed relationship with an associated engine, said injection pump defining a pumping chamber, an outlet from the pumping chamber and which in use is connected to a nozzle mounted in an engine cylinder, a spill port extending from the pumping chamber, a spill valve rotatable in synchronism with the injection pump for controlling the flow of fuel through the spill port during a pumping stroke of the injection pump, the axial setting of said spill valve determining the quantity of fuel supplied through the outlet and the angular setting of the spill valve relative to the injection pump serving to alter the timing of injection of fuel through said outlet to the engine, a pulley rotatable in synchronism with the injection pump, means restraining the pulley against axial movement, a flange mounted on said pulley and rotatable therewith, a first centrifugal weight pivotally mounted on said flange, a hollow cylindrical member located within a bore formed in the pulley, a

helical spline connection between the pulley and said hollow cylindrical member, a rod extending within said hollow cylindrical member, said rod being coupled to said spill valve, means connecting said rod to said hollow cylindrical member whereby relative axial movement of the rod and cylindrical member can occur, a lever integral with said first weight, said lever extending through an aperture in said hollow cylindrical member and engaging said rod for moving with increasing engine speed the spill valve axially in a direction to reduce the



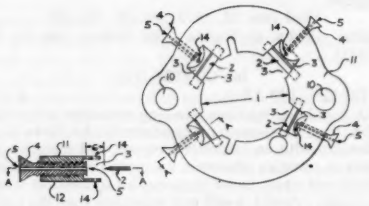
amount of fuel supplied to the engine, first resilient means acting on the rod in opposition to the force exerted by said first centrifugal weight operator adjustable means for varying the force exerted by the first resilient means, and a second centrifugal weight carried by said flange, a lever connected to said second weight, said lever engaging said hollow cylindrical member whereby with varying engine speed the axial position of the hollow cylindrical member will vary to effect angular movement of the spill valve relative to said pulley.

3,857,375

ULTRASONIC CARBURETION ENCHANCER

Walter G. Jackson, 9631 Lawyers Rd., Vienna, Va. 22180

Filed Apr. 20, 1973, Ser. No. 352,960
Int. Cl. F02m *29/00*
U.S. Cl. 123—141 **6 Claims**



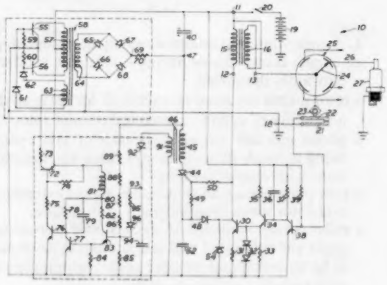
1. In an internal combustion engine, in which fuel is mixed with air prior to induction into a combustion chamber, a carburetor in which the fuel and air are mixed, a passage through which the fuel-air mixture flows from the carburetor to the combustion chamber, a valve in said passage for regulating the rate of flow, an air operated ultrasonic sound generator mounted in a location downstream from the valve and in position to impress an ultrasonic jet upon the fuel-air mixture, for the purpose of improved fuel vaporization, said generator having a chamber opening directly into the fuel-air mixture passage, an orifice of said generator through which an air jet flows through a wall of said passage and into the generator chamber, and a blade in line with the air jet at a location where the air jet has unrestrained flow past said blade and into the fuel-air mixture in the passage leading from the valve to the combustion chamber, the air jet impingement with an edge of the blade setting up an ultrasonic vibration of the jet where it merges with the fuel-air mixture in said passage.

3,857,376

REGULATED IGNITION AMPLIFIER CIRCUIT

Edward L. Williams, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed Feb. 9, 1973, Ser. No. 330,915
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **7 Claims**



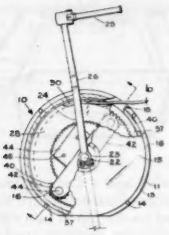
1. In a circuit for energizing an ignition coil including inductively coupled primary and secondary winding means, capacitor means, and control means coupled in circuit with said capacitor means and said primary winding means, said control means comprising charging means for applying a voltage to said capacitor means for charging said capacitor means, discharge means for discharging said capacitor means through said primary winding means to generate a high voltage wave form in said secondary winding means for ignition, disabling means for disabling said charging means during discharge of said capacitor means through said primary winding means, said disabling means including means responsive to discharge current of said capacitor means to develop a control signal, and control means responsive to said control signal to disable said charging means, said disabling means including a control transformer having primary and secondary windings, said primary winding of said control transformer being coupled in series between said capacitor means and said primary winding means to develop said control signal in said secondary winding thereof in response to discharge current of said capacitor means through said primary winding thereof.

3,857,377

KICK-STARTER MECHANISM FOR SNOWMOBILES AND THE LIKE

Frank G. Christensen, 62 Camwood Cres., Don Mills, Ontario, and Rafael T. Wulff, Dorset Post Office, Dorset, Ontario, both of Canada

Filed Apr. 13, 1973, Ser. No. 350,896
Int. Cl. F02h *3/04*
U.S. Cl. 123—185 BB 8 Claims



1. For starting an internal combustion engine of the type startable by pulling on a rope or other windable member,

a kick-starter mechanism comprising

a winding drum onto which such windable member may be engaged and wound, the winding drum mounting a concentric, outward-toothed gear,

a housing formed about a central axis having inward of its outer periphery an internal sector gear whose pitch radius, measured from said axis, is spacedly outward of the pitch radius of said winding drum gear, and

central shaft means supported in said housing for angular rotation on said housing axis, on which shaft means said winding drum and its gear are supported for rotation within said housing,

said shaft means having secured thereto a kick-start lever external of the housing and a planetary cage lever within said housing, together with

a planetary gear mounted on said cage lever for rotation intermeshed between said internal sector gear and said winding drum gear,

whereby angular movement of the kick-start lever from upward position to downward position rotates the winding drum.

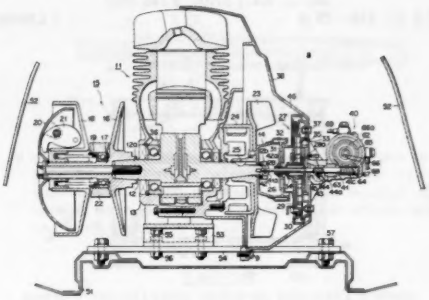
3,857,378

INTERNAL COMBUSTION ENGINE

Toshiaki Nakamura, Hamakita, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata-shi, Shizuoka-ken, Japan

Filed Aug. 7, 1973, Ser. No. 386,375
Claims priority, application Japan, Aug. 9, 1972, 47-93443
Int. Cl. F16n *13/10*
U.S. Cl. 123—196 R 5 Claims

1. In combination with an internal combustion engine a crank case, a crank shaft rotatably supported by and extending from the crank case through a main bearing, a recoil starter means located at one end of the crank shaft and having a starter housing supported by the crank case, and a main shaft fixed to the starter housing and arranged coaxially on the extension of the crank shaft, the improvement comprising: an oil pump mounted on the starter housing for a separate engine lubricating system, and a driving shaft fitted through a cylindrical through bore provided in said main shaft and drivingly



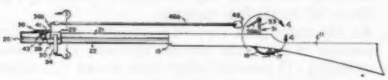
and detachably coupled to one end of the crank shaft so as to drive said oil pump.

3,857,379

SLINGSHOT-TYPE DEVICE WITH ELASTIC PROPULSION MEANS

Edward Lewis Burghardt, P.O. Box 130, Vernal, Utah 84078

Filed Apr. 11, 1973, Ser. No. 350,055
Int. Cl. F41b *7/00*
U.S. Cl. 124—20 R 8 Claims



1. A sling-shot type device comprising:

a. a frame;

b. a guide having a free end and being fixedly connected to said frame and extending from said frame;

c. a carriage means adapted to slide forwardly along the guide while tensioning elastic members anchored thereto so as to project a projectile, said carriage means includes an integral lever member for use in pressing said carriage toward the free end of said guide and a pair of bifurcated members fixedly connected to the carriage means and which extend outwardly from said carriage means;

d. catch means connected to said free end of said guide and adapted to selectively catch and hold said carriage near said free end;

e. a pair of elongated elastic members, each of which is connected at one end to a corresponding one of said bifurcated members;

f. means flexibly connecting the other ends of said elastic members together;

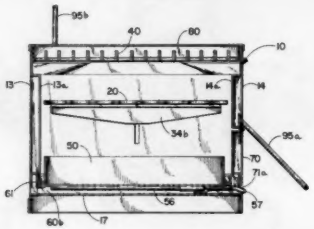
g. gate means mounted on said frame for selectively and directly holding said connecting means when said carriage means is slid towards and caught at said free end of said guide thereby to place said elastic members in tension and for selectively releasing said elastic members through a pivotal movement thereof under bias of the elastic members to permit disengagement of the connecting means from said gate means; and

h. trigger means mounted on said frame and operatively connected to said gate means to release the same by moving said trigger means.

3,857,380
BARBECUE GRILL

John E. Hansman, 660 Belmont Ln., St. Paul, Minn. 55102

Continuation-in-part of Ser. No. 165,135, July 22, 1971,. This application Aug. 27, 1973, Ser. No. 391,948
Int. Cl. A47j 37/07; F24b 3/00
U.S. Cl. 126—25 A 2 Claims



2. A barbecue grill, comprising:

a. A firebox, open at the top, comprising sheet metal vertically extending sidewalls and a bottom panel integral with said sidewalls; a door for partially closing off an elongated opening in one of said sidewalls and for defining a slotlike vent means; each of said sidewalls and said door comprising spaced apart sheet metal panels shaped to enclose a hollow space therebetween extending from a point spaced above said bottom panel to the top of said firebox;

b A grate member for supporting charcoal fuel and supported within said firebox housing in spaced apart relation from said bottom panel and the top of said firebox; said bottom panel, sidewall means and grate member defining a lower burning chamber for receiving a paperlike solid starter fuel material;

c. An adjustable grate support mechanism for adjusting the position of said grate member upwardly or downwardly, including (1) position adjustment means, (2) adjustable support members integral with said position adjustment means for supporting said grate member within said firebox, and (3) an adjusting tab for facilitating manual adjustment of said position adjustment means;

d. A broiling grill member, supported in closely spaced relation to the open top of said firebox and in spaced apart relation from said grate member;

e. A removable ash drawer, supported within said lower burning chamber and above the bottom edge of said slotlike vent means but in spaced apart relation from said grate member; and

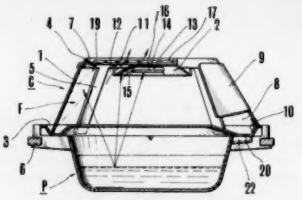
f. Drawer support means, resting on said bottom panel, for supporting said ash drawer means in spaced apart relation above said bottom panel.

3,857,381
FRYING PAN SPLASH SHIELDING DEVICE

Kyosuke Kato, 58-21, Gejo-cho, Kasugai City, Aichi Prefecture, Japan

Filed Mar. 29, 1974, Ser. No. 455,962
Int. Cl. B65d 51/02; A47j 27/58
U.S. Cl. 126—384 5 Claims

1. A device comprising a food frying pan and a hood mounted thereon and covering the open area of said pan; said hood being formed of an inclined-mounted side wall member and a top wall member attached to a frame structure and embracing a space of an appropriate height over the open area of said pan, said frame structure having a lower portion and an upper portion, said side wall member being provided with a transparent portion and having an opening passage in one portion thereof for loading and unloading food to the interior area of said device, a door means for closing said opening passage and being hinged at its lower edge to said lower frame portion whereby said door means can be moved to a closed position leaning on the outside of said inclined-mounted side wall member, said top wall member being suspended from said upper frame portion at an appropriate distance therefrom, and said hood being provided with a first vent passage formed between said upper frame portion and said top wall member, and a second vent passage formed between a central opening

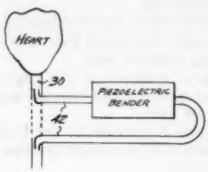


of said top wall member and a disc suspended from said top wall member at an appropriate downward distance therefrom; a rack means installed on the top of said top wall member for the purpose of draining the dripping cooking oil therefrom; and an oil return means associated with said pan and said hood and utilizing the inclined surface of said top wall member for the purpose of returning the dripping oil splashes to the oil bath in said pan.

3,857,382
PIEZOELECTRIC HEART ASSIST APPARATUS

Maryon J. Williams, Jr., Augusta, Ga.; Walter Welkowitz, Metuchen; Sylvan Fich, Edison, both of N.J.; Dov Jaron, Detroit; Adrian Kantrowitz, Pontiac, both of Mich., and Donald A. Molony, Vienna, Austria, assignors to Sinai Hospital of Detroit, Detroit, Mich.

Continuation-in-part of Ser. No. 301,553, Oct. 27, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,799
Int. Cl. A61m 01/03; A61f 01/24
U.S. Cl. 128—1 D 6 Claims



1. Apparatus for providing mechanical assistance to a heart by generating pressure waves in the bloodstream, the pressure waves being introduced in the bloodstream so that diastolic pressure is increased; the apparatus comprising:

a tubular fluid path of resilient material adapted to be surgically connected to the bloodstream;

piezoelectric means for alternately compressing and releasing said tubular fluid path and for generating sinusoidal pressure waves in said tubular fluid path in response to a driving signal; and

a frame;

said piezoelectric means including at least two piezoelectric bender means each bender means having a central support and a piezoelectric ceramic bonded thereto, each bender means configured as a cantilever with one end fixed to said frame and the other end free, and having a mass operably loading the free end thereof to provide a predetermined resonant frequency;

whereby upon application of said driving signal, each piezoelectric bender means resonates at a frequency in the

range of the heart frequency to generate pressure waves in said tubular fluid path thereby increasing the mean arterial blood flow.

3,857,383

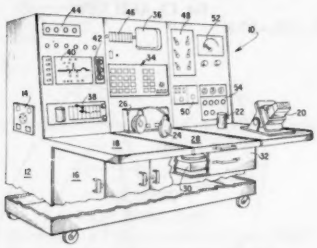
MULTIPHASIC HEALTH SCREENING METHOD AND MODULE

Irwin H. Sommerfeld, Mount Prospect; Edmond L. Morgan, Des Plaines; Ethan J. Allen, Northbrook, and Charles N. Dewey, Palatine, all of Ill., assignors to International Health Systems, Inc., Des Plaines, Ill.

Continuation of Ser. No. 36,132, May 11, 1970, abandoned. This application Nov. 17, 1972, Ser. No. 307,485

Int. Cl. A61b *5/00*

U.S. Cl. 128—2 D **10 Claims**



1. A semi-automatic, multiphasic health screening method for human individuals comprising the steps of: orienting at least two individuals adjacent to a multiphasic health screening module having therein a plurality of different electronically operable health parameter measuring test devices coupled to a common group of test readout recorders, whereby the entire screening is accomplished adjacent the module; electronically coupling each individual to the one module by way of a plurality of sensors and leads which transmit a plurality of different health parameters to at least some of the test devices in the module; automatically selecting a predetermined sequence of health screening tests to be performed on each individual by use of the test devices said selecting including the step of directing electrically which test is being performed upon each individual, such that at any one time a different test is being directed to each individual; performing each selected test for a relatively short period of time, and only once per individual by way of said automatically selecting; encoding, at least in part by the readout recorders, the data results from each test prior to advancing to the next test; and automatically enabling the performing of the next of the predetermined sequence of health tests and then accomplishing said steps of performing and encoding.

3,857,384

CERVICAL TISSUE CELL SPECIMEN GATHERING DEVICE

George W. Watson, 2159 Downington Ave., Salt Lake City, Utah 84108

Filed Apr. 9, 1973, Ser. No. 348,960

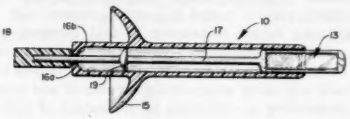
Int. Cl. A61b *10/00*

U.S. Cl. 128—2 B **7 Claims**

1. A cervical tissue cell specimen gathering device comprising

an elongate, tubular insertion housing having an open insertion end and a rear end with a hole therethrough;

a slide carrier including a shaft extending slidably and rotatably from a handle larger than said hole in the rear end, through said hole and into said housing, a collar on the shaft within the housing limiting travel of the shaft through the rear end in the direction of the handle, and a support frame for a slide at the end of the shaft opposite to the handle, said support frame being entirely within the housing when the collar is in engagement with the rear end of the housing, and projecting at least partially from the housing when the handle is in engagement with the rear end of the housing; and



a microscope slide having a collection surface thereon, said slide being removably secured to the support frame, whereby said collection surface on the slide is outside the housing when the handle is in engagement with the rear end of the housing.

3,857,385

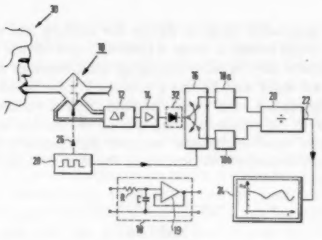
DIRECT INDICATING DEVICES FOR MEASURING RESPIRATORY RESISTANCE

Franz Hampl, Hoechberg, Germany, assignor to Erich Jaeger, Wurzburg, Germany

Continuation of Ser. No. 129,678, March 31, 1973, abandoned. This application June 5, 1973, Ser. No. 367,344

Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **7 Claims**



1. A direct indicating device for continuously measuring the internal resistance of a person's respiratory system comprising:

a flow resistance chamber having a connection adapted for the person's mouth or nose and a connection to the atmosphere and having an interposed variable resistance means, switchable between two finite values of resistance, through which air breathed by said person through said mouth or nose connection must pass;

flow resistance switching means operatively connected with said variable resistance means for switching said resistance means between said two values of resistance;

pressure sensing means connected to said chamber and responsive to the pressure difference across said flow resistance means and including means for providing an electrical output representative of said pressure difference;

two electrical storage means for storing differential pressure output signals of said pressure sensing means respectively related to said two resistance values, each of said storage means having an input and an output connection and includes means capable of following a signal provided to said input connection and of storing the last value of the signal so provided when said input connection is disconnected from said pressure sensing means;

signal switching means synchronized with said flow resistance switching means arranged for alternately connecting each of said storage means to said electrical output of said pressure sensing means;

timing means including means for causing repetitive back-and-forth operation, in synchronism, of said flow resistance switching means and for said signal switching means at intervals short compared with a person's normal breathing cycle;

quotient producing means responsive to the respective signals present in said two storage means, and

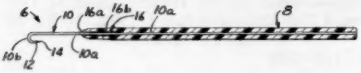
indicating means responsive to said quotient producing means for continuously indicating respiratory resistance of said person during at least one direction of breathing, said indicating means being capable of and arranged for responding to variations of the output of said quotient producing means within any unidirectional breath flow period of the person's breathing cycle.

3,857,386

SURGICAL DEVICE FOR HOLDING AND RETRACTING SKIN OR BONE

Theodore Shelly Ashbell, 900 N. Michigan Ave., Chicago, Ill. 60611

Filed Aug. 17, 1973, Ser. No. 389,254
Int. Cl. A61b *17/02, 17/18*
U.S. Cl. 128—20 **11 Claims**



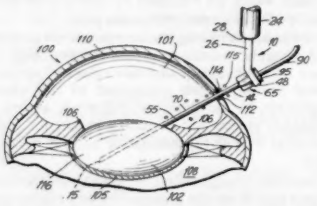
1. A disposable surgical device for holding and retracting skin or small bones or bone fragments, said device including a sterilizable skin or bone-engaging hook member made of a thin metal stock and having a pointed hook-shaped end portion terminating in a shank portion, and a handle-forming member to be grasped during use of the device made of a sterilizable synthetic plastic material permanently integrally connected to said shank portion of the skin or bone-engaging member.

3,857,387

ULTRASONIC CATARACT REMOVAL METHOD AND APPARATUS

John P. Shock, San Rafael, Calif., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,429
Int. Cl. A61h *23/00;* **A61f** *9/00*
U.S. Cl. 128—24 A **24 Claims**



1. The method of removing a cataract mass of tissue from its enclosed area in the eye, comprising the steps of:

A. forming an incision on the eye in order to gain access to the cataract,

B. inserting a tool member having an output edge through the incision,

C. engaging the output edge of said tool member with the surface of the cataract,

D. reducing the size of the cataract in its enclosed area by:

1. vibrating the tool member to provide peak accelerations of at least 1,000g, to transmit said vibrations to the tissue of the cataract in engagement therewith,

2. moving said vibrating tool member relative to said cataract to form an aperture in said cataract to reduce the volume thereof,

3. retracting said vibrating tool member from the aperture formed within said cataract, and

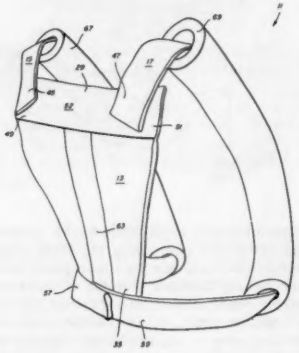
E. removing the cataract from the incision.

3,857,388

UNIVERSAL CLAVICLE SPLINT

Sylvan A. Frankel, Billings, Mont., assignor to Richards Manufacturing Company, Memphis, Tenn.

Filed Oct. 18, 1973, Ser. No. 407,428
Int. Cl. A61f *5/04*
U.S. Cl. 128—87 R **8 Claims**



8. A clavicle splint comprising a backplate member for contiguously engaging the back of the user, horizontal means fixedly attached to said backplate member and extending in a direction along the width thereof so as to extend substantially parallel with and along the lengths of the clavicle bones of the user, vertical means fixedly attached to said backplate member and extending in a direction along the length thereof so as to extend substantially along the midline posterior of the user, first and second flexible shoulder strap means for engaging the shoulders of the user to restrict his movement thereof, the upper ends of said first and second strap means respectively including means for grippingly engaging said horizontal means selectively along the length thereof, means for adjustably attaching the lower ends of said first and second strap means one to the other and means attached to the lower ends of one of said strap means for grippingly engaging said vertical means selectively along the length thereof whereby tension may be applied to said first and second strap means.

3,857,389

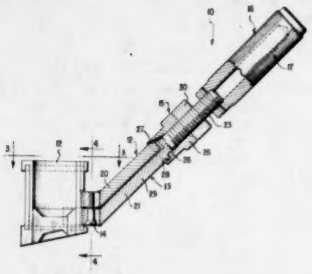
PROSTHESIS HOLDER

Harlan C. Amstutz, 433 Burlingame Ave., Los Angeles, Calif. 90049

Filed June 6, 1973, Ser. No. 367,694
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 EC **7 Claims**

1. A prosthesis holder including a pair of opposing jaws adapted for grasping a prosthesis, a short and a long locking stud, one stud mounted on each jaw for angular motion therewith, a locking member carried on the long stud for selectively engaging the short stud and urging the short stud into angular superposition over the long stud, thereby simultaneously urging said holder jaws into their prosthesis grasping position

and hinge means for mounting the jaws to one another so as to permit relative angular motion therebetween, said hinge



means being located between said jaws and said locking member.

3,857,390

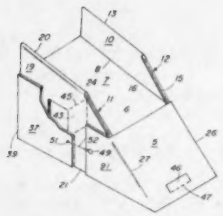
FRACTURE BOX

Howard D. Harrison, 16 Pine St., Lowell, Mass. 01851

Filed Oct. 19, 1973, Ser. No. 407,869

Int. Cl. A61f *5/04*

U.S. Cl. 128—93 **9 Claims**



1. A fracture box comprising:

a. a leg supporting section including a substantially rectangular planar panel,

b. a pair of planar side wall members hingedly connected to opposite sides of said panel by a pair of hinged connections, each of said hinged connections being displaced from the upper edge of each of said side wall members whereby a leg-receiving channel is provided between said panel and the upper portions of said side wall members;

c. each of said side wall members having a bottom edge, said bottom edges defining the base plane of said fracture box;

d. each of said hinged connections being disposed at a predetermined acute angle with respect to said base plane;

e. said side wall members being rotatable about said hinged connections from a collapsed position, in which the plane of each of said side wall members and the plane of said panel are superposed, to an assembled position in which the plane of each of said side wall members is substantially perpendicular to the plane of said panel with the plane of said panel also being disposed at said predetermined acute angle with respect to said base plane;

f. and means for maintaining said side wall members in said assembled position.

3,857,391

UNIVERSAL TUBULAR INSERTER FOR INTRAUTERINE DEVICES

Irwin S. Lerner, Greenwich, Conn., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Mar. 1, 1974, Ser. No. 447,262

Int. Cl. A61f *5/46*

U.S. Cl. 128—127 **35 Claims**

1. An inserter for high fundal positioning of a resilient intrauterine device comprising: an elongate tubular body having a front, cervix entry and intrauterine device expulsion end and a rear terminal end; means for housing a major portion of a resilient intrauterine device within the tubular body adjacent said body front end with said intrauterine device in a substantially undeformed, expanded configuration; and intermediate intrauterine device disposition means located between said intrauterine device major portion housing means and said tubular body front entry end for positioning said resilient intrauterine device substantially wholly within said inserter; whereby the intrauterine device may be deformed into an elongate shape within said intermediate disposition means prior to insertion of the tubular body into placement position relative to a uterus and thereafter expelled therefrom into an undeformed expanded configuration within a uterine cavity.

3,857,392

INTRAVENOUS CONTAINER WITH DISLODGEABLE SEPTUM AND DISLODGING PIERCER

Robert W. Ogle, Newport Beach, Calif., assignor to IMS, Wilmington, Del.

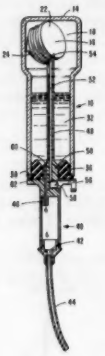
Continuation-in-part of Ser. No. 195,886, Nov. 4, 1971, which is a division of Ser. No. 830,311, June 4, 1969, Pat. No. 3,674,028. This application Nov. 1, 1972, Ser. No. 302,782

Int. Cl. A61m *5/16*

U.S. Cl. 128—214 C **7 Claims**

1. A novel device for the mixing and administration of intravenous fluid comprising a vial having an open end and a closed end, a dislodgeable septum intermediate said open and closed ends, an imperforate stopper in said open end, said vial being adapted to contain two liquids or a liquid and a dry material in separated state, a non-opaque drip meter having a fluid outlet at one end and a fluid inlet, said inlet comprising a tubular member terminating within said drip meter whereby drops can be visually observed at the end of said tubular member through said drip meter, extending from said drip meter a hollow elongated rigid spike having an enlarged base adjacent said drip meter, said spike terminating in a scarf at its other end, the hollow interior of said spike communicating with the exterior through a filtered air inlet positioned in

proximity to the base of said spike, a fluid passage running through said base and having one end adjacent the spike at the exterior of said base so that essentially all of the fluid within said vial can drain out by gravity through said fluid passage, and the other end of said fluid passage communicating with said tubular member, said spike piercing said stopper and



being adapted to dislodge said septum whereby the contents of the vial can be mixed without contamination from the exterior and the fluid contents of said vial can flow through said fluid passage and said drip meter while filtered air passes through said hollow spike and is discharged within said vial in the head-space above the fluid level within said vial.

3,857,393

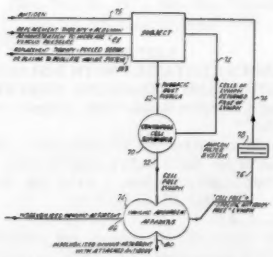
APPARATUS FOR USE IN THE AUGMENTATION OF THE PRODUCTION OF ANTIBODIES IN ANIMALS AND HUMANS AND THE COLLECTION THEREOF

Samuel Rose, La Jolla, Calif., assignor to Bio-Response, Inc., New York, N.Y.

Continuation of Ser. No. 136,476, April 22, 1971, Pat. No. 3,719,182. This application Jan. 30, 1973, Ser. No. 328,048

Int. Cl. A61m *1/03*

U.S. Cl. 128—214 R **12 Claims**



1. Apparatus for the augmentation of production of a specific antibody from a patient upom whom there has been performed a thoracic duct fistula comprising:

a. means adapted to be inserted into the fistula for removing lymph including lymph cells and lymph fluid from the thoracic duct, the lymph fluid including the specific antibody;

b. means connected to the lymph removing means for separating lymph cells from lymph fluid of the lymph removed from the thoracic duct, the separated lymph cells lacking specific anitbody;

c. means connected to the separating means for intravascularly returning the separated lymph cells to the patient; and

d. means connected to the separating means for removing the specific antibody from the lymph fluid of the lymph from which the lymph cells have been separated.

3,857,394

GYNAECOLOGICAL DEVICE

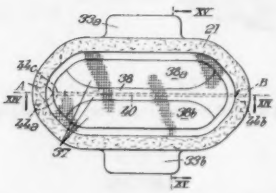
Raymond Alemany, 2, rue Gervex, Paris (17e), France

Filed Sept. 8, 1972, Ser. No. 287,469

Claims priority, application France, Sept. 17, 1971, 71.33617

Int. Cl. A61m *31/00*

U.S. Cl. 128—260 **9 Claims**



1. Gynaecological device constituting a vulvar compress of oblong shape, said device comprising a peripheral rim of absorbent material, a continuous substantially oblong support sheet of a flexible and impermeable material bounded by said rim, and a sheet of a material of the gauze type forming an inner lining on said support sheet, said lining being adapted to match the anatomical contours and said rim constituting the only absorbent part of the device.

3,857,395

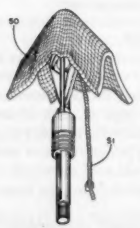
CONFORMABLE ABSORBENT TAMPON AND INSERTER DEVICE THEREFOR

Russell L. Johnson, Weyauwega; Robert J. Peerenboom, Little Chute; Donald M. Fries, Combined Locks; Leonard M. Kaczmarzyk, Neenah, and Arnold J. Buss, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 28, 1974, Ser. No. 437,044

Int. Cl. A61f *15/00;* **A61m** *29/00*

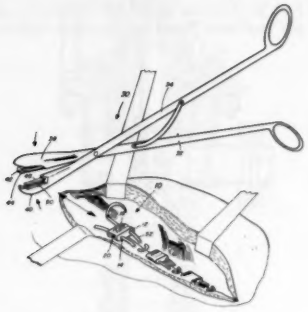
U.S. Cl. 128—263 **30 Claims**



1. In combination, a conformable absorbent tampon and an elongate inserter means; said inserter means having a bilaterally spreadable forward end portion and a trailing end portion for grasping by the user when inserting said tampon; said tampon comprising a flat absorbent pad draped over and enclosing the forward end portion of said inserter means; said forward end portion being of hinged construction; said hinged construction comprising a pair of flexible arms having a means for bilaterally diverging the arms from each other at an intermediate portion of their length when longitudinal pressure is exerted against one end of said arms by said trailing end por-

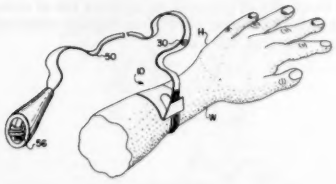
tion; said inserter means being adapted to insert said tampon into the vagina while said tampon is draped over said forward end and to bilaterally spread said tampon within the vaginal cavity after insertion therein.

3,857,396
SUTURE CLAMP
Charles W. Hardwick, 600 W. 27th St., Sanford, Fla. 32771
Filed Aug. 22, 1973, Ser. No. 390,514
Int. Cl. A61b *17/04*
U.S. Cl. 128—335 **6 Claims**



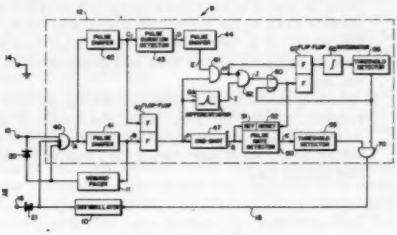
1. Suture clamping means comprising:
a compressible member having a hole extending therethrough;
means for locking a suture in said hole, said locking means comprising a ridge extending along a first outer surface of said member substantially transverse to said hole and wherein
compression of said ridge reduces the cross-sectional area of said hole to lock suture therein.

3,857,397
ELECTRICALLY CONDUCTIVE WRIST STRAP
Alfred J. Brosseau, Natick, Mass., assignor to Custom Materials, Inc., Chelmsford, Mass.
Filed Nov. 27, 1972, Ser. No. 309,867
Int. Cl. A61n *1/04*
U.S. Cl. 128—384 **12 Claims**



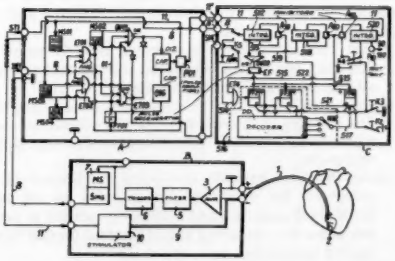
1. An electrically conductive wrist strap comprising:
a. an electrically conductive flexible strip having first and second ends,
b. means comprising an opening in said strip spaced from and adjacent to the first end for permitting passage therethrough of the second end of said strip;
c. first cooperating fastening means on said strip between said opening and said first end and second cooperating fastening means on said strip between said opening and said second end for adjustably fastening an intermediate portion of said strip to said strip at the first end thereof, and
d. conductive terminal means on said strip, whereby a person wearing said strap may be connected to ground.

3,857,398
ELECTRICAL CARDIAC DEFIBRILLATOR
Leo Rubin, 301-17 Spring St., Red Bank, N.J.
Filed Dec. 13, 1971, Ser. No. 207,148
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 D **12 Claims**



1. Apparatus for electrically stimulating the heart comprising: electrode means;
Sensing means having an input connected to said electrode means for sensing cardiac electrical signals;
pulse rate detector means for detecting the average rate of occurrence of the ORS complexes of said cardiac electrical signals over a predetermined time period;
pulse duration detector means for detecting the Q to S period of each said QRS complex in said cardiac electrical signal, said pulse duration detector means being connected to said pulse rate detector means to permit rate detection for pulses whose duration is greater than a predetermined value;
threshold logic means connected to said pulse rate detector means and said pulse duration detector means for providing an output pulse when the average rate of occurrence of said QRS complexes exceeds a predetermined value and a predetermined number of said Q to S periods exceed a predetermined time period; and
defibrillator means connected to the output of said logic means for generating a defibrillating pulse on said electrode means in response to receiving a pulse from said threshold logic means.

3,857,399
HEART PACER
Fred Zacouto, 16, rue de la Convention, Paris 15eme, France
Filed Mar. 19, 1971, Ser. No. 126,069
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **61 Claims**



1. Method of electrically stimulating the cardiac muscle by means of an automatic device comprising heart stimulating and detecting means, which method comprises the steps of:
A. detecting spontaneous heart signals,

B. transmitting electrical stimulating pulses to the cardiac muscle at predetermined intervals in the absence of a spontaneous heart signal,

C. sensing the time between the occurrence of an electrical stimulating pulse and the detection of a directly successive spontaneous heart signal,

D. suspending the transmission of an electrical stimulating pulse for one of at least two waiting periods when a spontaneous heart signal is detected after a stimulating pulse, the length of at least one of said at least two waiting periods being no greater than said predetermined inverval, and

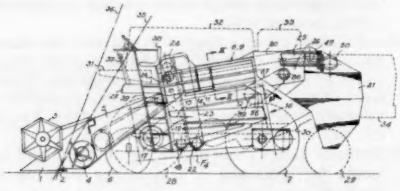
E. selecting said one of at least two waiting periods in dependence upon said sensed time, the length of said selected waiting period being an increasing function of said sensed time over at least part of the range of variation of said sensed time.

3,857,400

COMBINE HARVESTER

Frans J. G. C. De Coene, Zedelgem, Belgium, assignor to Clayson N.V., Zedelgem, Belgium

Filed Oct. 20, 1972, Ser. No. 299,474
Int. Cl. A01f *7/06*
U.S. Cl. 130—27 T **9 Claims**



1. In an axial flow combine having a main frame adapted to travel across a field, means for harvesting crop material, means mounted on the frame for conveying the crop material to the frame, means mounted on the frame for threshing and separating said crop material conveyed to said frame, the threshing and separating means extending longitudinally on said frame, wherein the improvement comprises: means mounted on the frame for cleaning said threshed and separated material comprising;

a first cleaning receptacle mounted directly below the threshing and separating means and adapted to receive said threshed and separated material,

a second cleaning receptacle mounted directly below the first cleaning receptacle and which is adapted to receive a portion of said material contained on said first cleaning receptacle,

means mounted forwardly and below said second cleaning receptacle for supplying and directing an air stream across both said first and second receptacles to remove any impurities contained in said material on said first and second receptacles, and

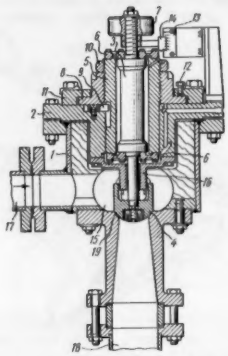
means interposed between said threshing and separating means and said first receptacle for controlling the movement of said threshed and separated material received from said threshing and separating means as well as shielding said first receptacle from the draft generated by said threshing and separating means.

3,857,401

METHOD OF ELIMINATING VIBRATIONS OF THE REGULATING VALVE

Grigory Alexandrovich Khanin, Institutsky prospekt 29, kv. 45, Leningrad, U.S.S.R.

Filed June 5, 1972, Ser. No. 259,803
Int. Cl. F16k *47/00*
U.S. Cl. 137—1 **5 Claims**



1. A method for eliminating vibrations of a regulating vlave provided in a working fluid medium feed line and including a flow chamber and an actuation system comprising a stem coupled with an actuator, a head accomodated in said flow chamber of the valve to control the working fluid medium flow rate, characterized by the steps of: determining the natural frequency of the mechanical vibration of said actuation system of said valve during a stem uplift corresponding to the mode of vibration of said valve; determining, during the same stem uplift, the natural frequency of the acoustic vibration of the working fluid medium in said flow chamber of said valve; and comparing the obtained frequencies and bringing the natural frequency of the working medium out of coincidence with the natural frequency of the mechanical vibration of said actuation system of said valve.

3,857,402

TRANSMISSION OF OIL

Theodore R. Schuh, North Riverside, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Aug. 31, 1972, Ser. No. 285,511
Int. Cl. F17d *1/16, 1/18*
U.S. Cl. 137—13 **1 Claim**

1. A method of improving transmission efficiency of oil in a pipe comprising: introducing into the pipe containing the oil being transmitted a latex containing a friction reducing polymer selected from the group consisting of cis 1-4 polyisoprene and polyisobutylene dispersed in water, and inverting the latex to disperse the polymer in the oil by concurrently adding an oil soluble non-ionic surfactant selected from the group consisting of sorbitan trioleate and alkylphenoxypoly (ethyleneoxy) ethanol.

3,857,403

FLAVORED TOBACCO PRODUCT

Edouard P. Demole, Coppet/Vaud, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

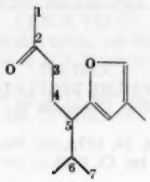
Filed June 14, 1973, Ser. No. 370,050

Claims priority, application Switzerland, June 16, 1972, 9075/72

Int. Cl. A24b *15/04*

U.S. Cl. 131—17 R 1 Claim

1. A tobacco product selected from the group consisting essentially of tobacco and tobacco substitutes which has added thereto of between about 1 to 500 ppm by weight of the flavouring compound consisting essentially of 5-(4-methyl-2-furyl)-6-methyl-heptan-2-one which manifests the following formula:



3,857,404

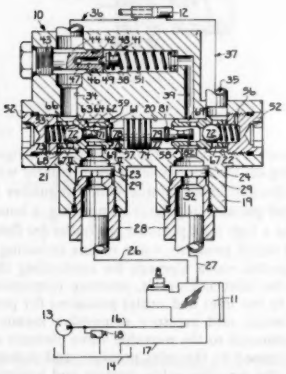
HYDRAULICALLY OPERATED LOCK VALVE ASSEMBLY

Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 30, 1973, Ser. No. 355,473

Int. Cl. F15b *15/00*

U.S. Cl. 137—102 11 Claims



1. A lock valve assembly for controlling fluid flow in a hydraulic jack having inlet and outlet means for selectively supplying fluid to either end of the jack cylinder while exhausting fluid from the opposite end comprising:

a valve housing;

a bore formed in said housing;

a first pair of ports in spaced communication with said bore for communicating with a source of pressurized fluid;

a second pair of ports communicating with said bore and opposite ends of the jack cylinder;

first check valve means disposed in said bore between one of said first ports and one of said second ports;

second check valve means disposed in said bore between the other of said first port and the other of said second port;

each of said first and second check valve means including a passage communicating between each of said respective first and second ports, a valve seat surrounding said passage, and a valve element engaging said seat normally for blocking fluid flow from said second pair of ports to said first pair of ports; and

an actuator piston reciprocally disposed in said bore between said first pair of ports and having a pair of plungers extending axially from opposite ends thereof, said plungers terminating in metering head means operative to engage and unseat either check valve element upon endwise movement of the piston, said metering head means being shaped to provide separate metering portions cooperating with said valve passage for regulating fluid flow through the check valves.

3,857,405

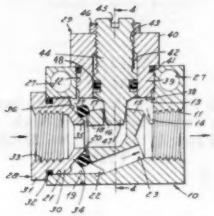
INTERCHANGEABLE RIGHT ANGLE OR INLINE FLOW CONTROL VALVE

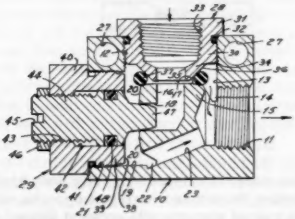
Robert J. Heideman, 16137 W. Parkway, Detroit, Mich. 48219

Filed Nov. 30, 1973, Ser. No. 420,631

Int. Cl. F16k *11/10*

U.S. Cl. 137—269.5 6 Claims





1. In an interchangeable fluid flow control valve, the combination comprising:

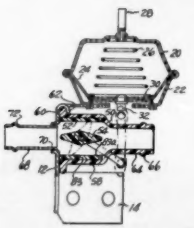
a. a valve body having an outlet port with a longitudinal axis;

b. a first valve chamber in said valve body and having a longitudinal axis perpendicular to the longitudinal axis of said outlet port and an opening communicating the first valve chamber to the exterior of the valve body;
c. a second valve chamber in said valve body and having a longitudinal axis inline with the longitudinal axis of said outlet port and an opening communicating the second valve chamber to the exterior of the valve body;
d. each of said openings communicating said valve chambers to the exterior of the valve body being of equal size;
e. a first flow passage means formed in said valve body for communicating each of said valve chambers with said outlet port;
f. a second flow passage means formed in said valve body with a first end communicating with said first valve chamber and a second end communicating with said second valve chamber;
g. a check valve retainer assembly means, selectively mounted in one of said valve chamber openings and extended into the respective chamber for said one opening, and including an inlet port communicating with the respective end of said second flow passage means communicating with the last mentioned chamber for conducting fluid into said second flow passage means;
h. said check valve retainer assembly means including a one-way check valve for controlling flow of fluid from said inlet port into said last mentioned valve chamber and to check fluid flow from said last mentioned valve chamber into said inlet port; and,
i. a flow control needle valve assembly means selectively mounted in the other of said valve chamber openings and extended into the respective chamber for said other opening for operative engagement with the respective end of said second flow passage means communicating with the last mentioned chamber for controlling fluid flow between said second flow passage means and said last mentioned chamber.

3,857,406
VALVE

Anthony Dorling, St. Clair Shores, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed Jan. 2, 1973, Ser. No. 320,104
Int. Cl. F16k *27/00*
U.S. Cl. 137—315 **10 Claims**

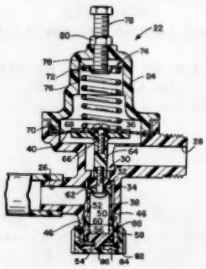


1. A valve assembly comprising a valve body having a cylindrical chamber therein and having at opposite sides of said chamber a pair of diametrically opposed aligned cylindrical shaft receiving openings, one of said openings being closed at its outer end, a pivot shaft having aligned spaced cylindrical portions in said openings, a valve having a peripheral outline substantially generally in the form of an ellipse fixed to said shaft within said chamber, said valve being flattened and movable between an open position in which it extends generally parallel to the axis of said chamber and an inclined closed position in which its peripheral surface engages the inner surface of said chamber, said valve having a centrally located diametrically extending transverse opening therethrough and at least the portion of said valve provided with said transverse opening being formed of elastically deformable material to provide for insertion of said shaft through one opening in the valve body and the opening through said valve while said valve is located in said chamber, said shaft having a serrated central portion intermediate said spaced cylindrical portions provided with longitudinally extending radially outwardly formed serrations dimensioned relative to the transverse opening through said valve to be slidable therethrough and to deform the material of said valve to establish a driving connection thereto.

3,857,407
PRESSURE REGULATOR

Donald O. Olson, 5885 Darmouth St., Chula Vista, Calif. 92010

Filed Sept. 24, 1973, Ser. No. 399,844
Int. Cl. F16k *31/14*
U.S. Cl. 137—495 **2 Claims**



1. A pressure regulator of the kind used in irrigation systems for shutting off the flow through the regulator without changing the effective biasing force which regulates the pressure output, said pressure regulator comprising, a housing, an inlet for fluid at a high inlet pressure, an outlet for fluid at a lower, regulated outlet pressure, valve means including a valve seat and a movable valve element for controlling the fluid flow between the inlet and outlet, pressure responsive means responsive to the inlet and outlet pressures for positioning the valve element, said pressure responsive means including a piston connected to the movable valve element and having a surface exposed to the inlet pressure and a diaphragm connected to the movable valve element and having one surface exposed to the outlet pressure, adjustable calibration means associated with the pressure responsive means for applying a selected amount of a biasing force to the diaphragm and valve element, said adjustable calibration means including a spring engaged with the diaphragm on the side opposite the side exposed to the inlet pressure and a screw for varying the force exerted by the spring on the diaphragm and movable valve element, a cylindrical boss extending outward of the housing, a cylinder in the boss mounting the piston for reciprocation therein, retaining means for limiting outward movement of the piston under the biasing force exerted by said spring in the full open position of the valve means, an extension formed inte-

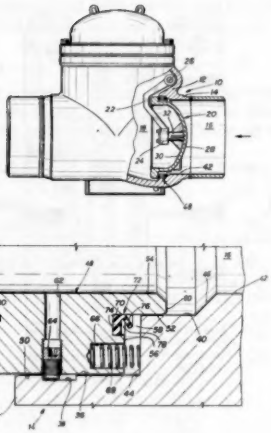
grally with the piston and dimensioned to extend outward beyond the end of the boss when the piston is engaged with the snap ring, and a cap threaded on the end of the boss and engageable with said extension to move the valve element into engagement with the valve seat against the bias of the spring when the cap is turned down on the boss and also rotatable outward on the boss to a position in which the cap is disengaged from the extension as the piston engages the retaining means whereby the cap can be used to close and to open the pressure regulator to fluid flow without changing the effective biasing force set by the screw on the spring.

3,857,408

SEAT AND SEALING MEANS FOR CLAPPER-TYPE CHECK VALVE

Allen F. Rhodes, Riverside, Conn., and Ruben G. Alaniz, Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,979
Int. Cl. F16k *15/03*
U.S. Cl. 137—514 **7 Claims**



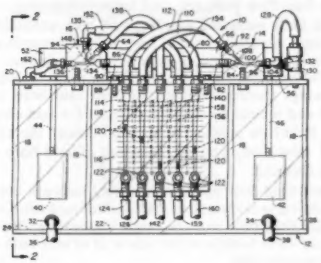
1. A check valve structure comprising, a valve body having a conduit forming a flow passage with an end of the flow passage being recessed, a seat ring received within the recessed end of the conduit and mounted for movement axially of the conduit between an extended position and a retracted position, a clapper-type valve member mounted for swinging movement within the body and adapted to contact and seat on said seat ring when in a closed position, a fluid chamber formed between opposed facing surfaces on said seat ring and said recessed end, first port means permitting a limited flow of fluid between the fluid chamber and the flow passage from one end of the seat ring, second port means permitting a limited flow of fluid between the fluid chamber and the flow passage from an opposed end of the seat ring, and a seal on said facing surface of said seat ring extending into said fluid chamber and being in spaced relation to the adjacent facing surface of said recessed end in an open position of the clapper-type valve member to permit a flow of flowline fluid through the fluid chamber from said first and second port means in the open position of the valve member, said seal upon movement of the seat ring toward a retracted position contacting said facing surface of the recessed end and effecting a tight sealing relation between the body and the seat ring to prevent a flow of flowline fluid through the fluid chamber, said fluid being metered from the fluid chamber through said first and second port means upon movement of said seat ring to a retracted position from extended position for hydraulically cushioning such movement.

3,857,409

LIQUID MIXING APPARATUS

William B. Aubrey, 8424 Yolander Ave., Northridge, Calif. 91324; Angelo A. Giordano, 21716 Napa St., and Raymond Giordano, 7815 Vicky Ave., both of Canoga Park, Calif. 91304

Filed Mar. 26, 1973, Ser. No. 345,004
Int. Cl. F16k *19/00*
U.S. Cl. 137—604 **11 Claims**



1. A liquid mixing apparatus comprising:

a housing;

a first mixing section and a second mixing section, each of said mixing sections being mounted upon said housing;

said first mixing section having a first inlet and a second inlet and a water inlet, said first mixing section having first means to intermix the liquid of said first inlet with a portion of said water and conduct such into a first conduit, said first mixing section having second means to intermix the liquid of said second inlet with a portion of said water and conduct such into a second conduit, both said first conduit and said second conduit extend exteriorly of said first mixing section and deposit both the respective liquids into a first reservoir tank;

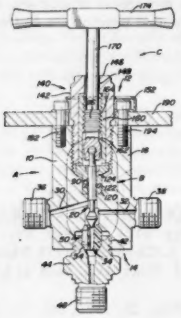
said second mixing section having a third inlet and a fourth inlet and a fifth inlet and a water inlet, said second mixing section having third means to intermix said water and the liquids of said third, fourth and fifth inlets and conduct such into a third conduit, said third conduit extends exteriorly of said second mixing section and deposits its liquid into a second reservoir tank; and

means for separately removing the liquids from said first and said second reservoir tanks.

3,857,410
SWITCHING VALVE

Alfred Bedo, Walton Hills, and Edward Beck, Cleveland Heights, both of Ohio, assignors to Sno-Trik Company, Solon, Ohio

Filed May 7, 1973, Ser. No. 357,558
Int. Cl. F16k *11/04*
U.S. Cl. 137—625.27 13 Claims

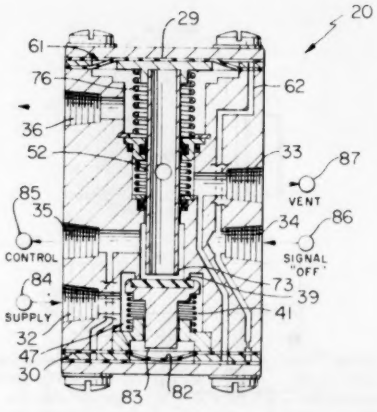


1. A switching valve for controlling fluid flow between three separate fluid flow passages, said valve comprising:
a valve body including an elongated bore extending therethrough, a portion of said bore adjacent one end thereof defining a generally cylindrical valve chamber;
first and second axially aligned valve seats including fluid openings therethrough disposed in said bore to define first and second axially spaced ends for said chamber;
a first fluid flow passage extending between the exterior of said valve body and the side wall of said bore adjacent said first end;
a second fluid flow passage extending between the exterior of said valve body and the side wall of said valve chamber;
a third fluid flow passage extending between the exterior of said valve body and the side wall of said bore adjacent said second end;
a valve operating stem extending axially into said valve chamber through said first valve seat, said stem being dimensioned to provide a substantial flow area through said first valve seat and into said chamber about said stem, said valve stem further including a valve plug disposed in said chamber adjacent the end of said stem, said valve plug comprising unitary body having opposed, generally conically shaped end portions and a cylindrical center section being greater than the diameter of the fluid openings of said first and second seats;
means for selectively reciprocating said stem between a first seated position with said valve plug in a fluid flow blocking relationship with the fluid opening of the first seat to permit fluid flow between said second and third fluid flow passages and a second seated position with said valve plug in a fluid flow blocking relationship with the fluid opening of said second seat to permit fluid flow between said first and second fluid flow passages,
a sealing washer received in said bore on the other side of said first fluid passage from said first valve seat, said washer having a bore therethrough slightly larger than the diameter of said stem;
a sealing member closely received over said stem and spaced outwardly along said bore adjacent said sealing washer;
a bushing received over said stem and spaced outwardly along said bore adjacent said sealing member;
a packing nut threadedly received in said bore adjacent the other end thereof from said bore one end, said nut adapted to contact said bushing and to apply a compressive force to said sealing member; and,
a liner sleeve disposed in said packing unit, said liner sleeve housing the connection between said operating stem and said reciprocating means.

3,857,411
RELAY CONSTRUCTION AND PARTS THEREFOR OR THE LIKE

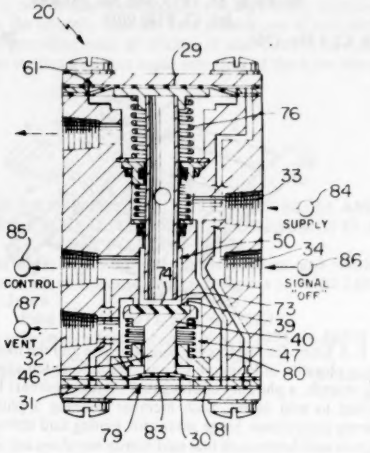
William T. Moon, Jr., Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed June 27, 1973, Ser. No. 373,941
Int. Cl. F16k *11/14*
U.S. Cl. 137—627.5 20 Claims



1. A relay construction comprising a housing having port means, said housing having passage means and valve means interconnecting with said port means, said housing having control means for causing said relay construction to selectively act as a normally closed relay, as a normally open relay or as a diverting relay, said control means comprising a movable valve member, said housing having balancing means for balancing said movable valve member under certain conditions of operation of said relay construction, said balancing means comprising a flexible diaphragm for engaging against said valve member when balancing the same and for being out

of contact with said valve member when not balancing said valve member, said housing having means for causing said



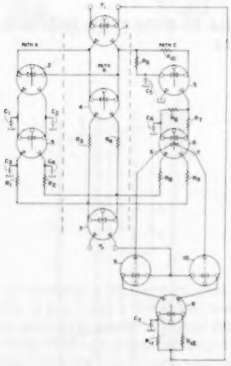
diaphragm to balance said valve member and for causing said diaphragm not to balance said valve member.

3,857,412

NOTCH TRACKING FLUIDIC FREQUENCY FILTER

Carl G. Ringwall, Scotia, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 12, 1973, Ser. No. 378,486
Int. Cl. F15c *1/14*
U.S. Cl. 137—814 **10 Claims**



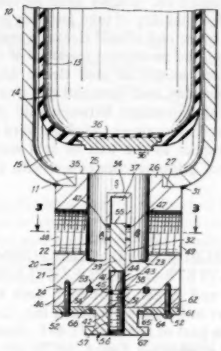
1. A notch tracking fluidic frequency filter including first, second, and third parallel fluid paths having a common bipolar fluidic signal input; a fluidic output summer for said fluid paths; said first fluid path including fluidic means for introducing a time lag to signals on said input; said second fluid path including fluidic means for providing a proportional gain to signals on said fluidic input; and said third fluid path including fluidic means for introducing a time lag and a gain k to signals on said fluidic input whereby k is greater than 1; and a fluidic phase discriminator having fluid control inputs and a fluid output, with said control fluid inputs connected to said common fluidic signal input and said fluidic output summer and said fluid output connected to said means in said third path.

3,857,413

PRESSURE PULSE DAMPENER DEVICE

Abduz Zahid, Monterey Park, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 195,243, Nov. 3, 1971, Pat. No. 3,782,418. This application Oct. 12, 1973, Ser. No. 405,914The portion of the term of this patent subsequent to Jan. 1, 1991, has been disclaimed.
Int. Cl. F16l *55/04*
U.S. Cl. 138—26 **6 Claims**



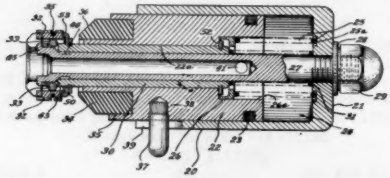
1. A pressure pulse dampener comprising a pressure vessel having a movable partition therein defining two chambers each having a port in communication therewith, one of said ports defining a gas port for charging of one of said chambers with gas under pressure and the other an oil port, valve means controlled by the movement of said partition to close said oil port, an oil port fitting comprising a hollow member having an opening axially aligned with said oil port and being rigidly secured thereto and in communication therewith, said member having a fixed partition therein defining two chambers, said fixed partition extending longitudinally of said oil port and being substantially axially aligned therewith, each chamber in said hollow member having one end spaced outwardly from said oil port, said member having two spaced openings extending thereinto and in communication respectively with said chambers, said fixed partition having fluid passage means therethrough aligned with said two openings, whereby a first tortuous path is provided for oil under pressure from one of said openings to the other of said openings, said oil port being in communication with said tortuous path, and a second direct path is provided by said fluid passage means from one of said openings to the other of said openings for a portion of the oil under pressure entering said first spaced opening and means to vary the size of said fluid passage means.

3,857,414

INTERNAL THREADED FITTING CONNECTOR

William D. Richardson, Palos Heights, and Ronald A. Zurawski, Chicago Ridge, both of Ill., assignors to Tuthill Pump Company, Chicago, Ill.

Filed Feb. 26, 1973, Ser. No. 335,932
Int. Cl. F16l 55/10
U.S. Cl. 138—90 11 Claims



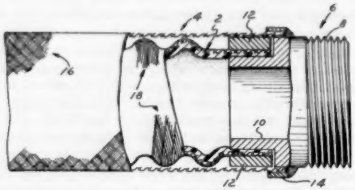
1. A quickly attachable and detachable test plug for fluid conduits including a housing having a plunger slidably mounted therein, seal means disposed between said housing and said plunger, an actuating stem carried by said housing and positioned coaxially with said housing and plunger, said stem extending through and beyond said plunger, an actuating sleeve carried by said plunger and positioned coaxially with said stem and adapted for relative axial movement with respect to said stem, a plurality of tube gripping jaws carried by said sleeve on an outer end of said sleeve, a seal on the outer end of said plunger and positioned inwardly of said jaws, said jaws being confined axially of said sleeve and ball means associated with said jaws, said stem and said sleeve, operative, upon relative axial movement between said stem and said sleeve in one direction to cause radial outward movement of said jaws with respect to the axis of said stem to thereby provide an internal gripping connection with a fitting being tested.

3,857,415

REINFORCED CONVOLUTED TUBING OF POLYTETRAFLUOROETHYLENE

Louis F. Morin, and Edgar L. McNeil, both of Springfield, Mass., assignors to Everflex Products, Inc., Ludlow, Mass.

Continuation-in-part of Ser. No. 72,441, Sept. 15, 1970, abandoned. This application Apr. 6, 1972, Ser. No. 241,760
Int. Cl. F16l 9/12
U.S. Cl. 138—122 3 Claims



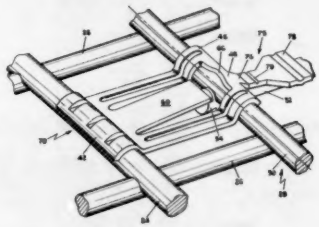
1. Reinforced tubing comprising a wall of cured PTFE material and a reinforcing contour braid integral therewith, said wall, including said braid, being of convolute configuration formed by alternate ridges and grooves, said braid being formed of component metal or glass strands disposed at a lead angle relative to the transverse direction of the tubing to follow said convolute configuration including the ridges and grooves thereof and being in generally uniform tension throughout said convoluted wall, said strands being at least partially embedded in said cured PTFE material.

3,857,416

HINGE FOR HINGED STIRRUP FABRIC

Daniel J. Borodin, and Mort W. Henry, both of Detroit, Mich., assignors to New York Wire Mills Corp., Tonawanda, N.Y.

Filed July 23, 1973, Ser. No. 381,694
Int. Cl. F16l 9/08
U.S. Cl. 138—175 28 Claims



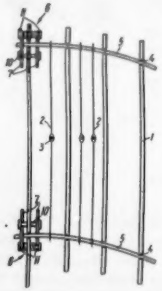
1. A fabric for reinforcing concrete pipe and the like including a plurality of longitudinal and circumferential cage defining strands; a plurality of elongated stirrup members hingedly joined to said fabric, each member defining a plurality of stirrup projections; hinge means for joining said stirrup members to said fabric such that said stirrup members are rotatable between a non-erect position and an erect position; said hinge means including yieldable restraining means secured to each said stirrup member for holding said stirrup member in said non-erect position, said yieldable restraining means being yieldable on application of a force to said stirrup member whereby said stirrup member can be erected.

3,857,417

HARNESS MECHANISMS FOR TRAVELLING WAVE SHEDDING LOOMS

Anatoly Grigorievich Selivanov, ulitsa Lobachevskogo, 44, kv. 59; Dmitry Vladimirovich Titov, 13 Parkovaya ulitsa, 27, korpus 2, kv. 49, both of Moscow, and Alexandr Mikhailovich Dyachkov, Roschinskaya ulitsa, 1, kv. 14, Klimovsk, all of U.S.S.R.

Continuation of Ser. No. 180,622, Sept. 15, 1971, abandoned. This application Dec. 14, 1972, Ser. No. 315,009
Claims priority, application U.S.S.R., Sept. 18, 1970, 1477601
Int. Cl. D03d 47/26; D03c 9/06
U.S. Cl. 139—12 2 Claims



1. A harness mechanism for a travelling wave shedding loom comprising: a plurality of spatially arranged shaft rods, the two opposite lateral sides at predetermined points longitudinally thereof being provided with slots; an extended flexible element passing through the laterally opposed slots of consec-

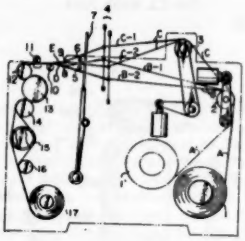
utive ones of the shafts so that a plurality of healds for the warp threads of the loom may be mounted therebetween; a plurality of locking means for locking said flexible element within corresponding ones of the slots in said shaft rods, each respective one of said locking means being fixedly mounted vicinal to the laterally opposed slots in each one of said shaft rods and providing ease of release of said flexible element therefrom to thereby effect rapid refeeding of the loom when required.

3,857,418

METHOD OF FORMING A PLURALITY OF SHEDS AND THEREBY A PLURALITY OF PIECES OF FABRICS IN A SHUTTLELESS LOOM

Kazuyoshi Kida; Morio Sakurai; Shigeru Furuta, and Seiichi Yamauchi, all of Komatsu, Japan, assignors to Teijin Ltd., Osaka, Japan

Filed Oct. 30, 1972, Ser. No. 302,192
Claims priority, application Japan, Nov. 6, 1971, 46-88378
Int. Cl. D03d *47/32*, *49/22*
U.S. Cl. 139—20 8 Claims



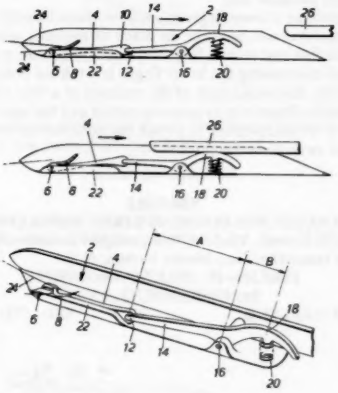
1. A method of forming a plurality of sheds and thereby weaving a plurality of fabrics in a shuttleless loom comprising dividing a primary warp yarn group unwound from at least one warp beam into warp yarn sub-groups arranged in a direction of shedding motion, the warp line of each warp yarn sub-group gradually and continuously approaching each other warp yarn sub-group and converging ahead of a cloth fell but behind the take-up rolls; forming a shed for each warp yarn sub-group such that the adjacent warp yarn systems of sheds cross each other between a reed and a cloth fell at the time of maximum shedding; inserting a pick of weft into each shed by fluid jet; and beating up the pick into the cloth with a common reed.

3,857,419

WEFT GRIPPER FOR SHUTTLELESS LOOMS

W. Denis Grenville Mackie, Templepatrick, Northern Ireland, assignor to James Mackie & Sons, Limited, Belfast, Northern Ireland

Filed Aug. 30, 1973, Ser. No. 392,906
Claims priority, application Great Britain, Aug. 31, 1972, 40498/72
Int. Cl. D03d *47/20*
U.S. Cl. 139—122 N 9 Claims



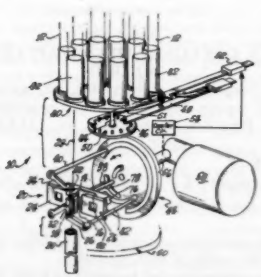
1. A weft inserter for a shuttleless loom of the transfer type having a pivoted lever, a yarn hook formed integrally with one end of said lever, said hook being located adjacent the leading end of the inserter and the lever being pivotally mounted to the inserter adjacent the hook.

3,857,420

CIRCUIT MODULE LEAD FORMING MACHINE

Reginald F. Newman, Sherman Oaks, Calif., assignor to Electronic Memories & Magnetics Corporation, Los Angeles, Calif.

Filed Nov. 6, 1972, Ser. No. 304,041
Int. Cl. B21f *45/00*
U.S. Cl. 140—71 R 5 Claims



5. A method for forming the leads of circuit modules that each include a body with opposite sides and leads extending from the opposite sides of the body, comprising

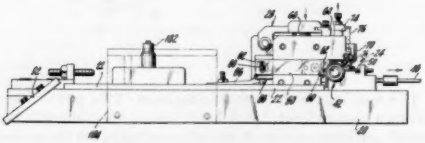
holding a circuit module against a die apparatus;
slideably holding a plurality of said modules in a vertical stack above said die apparatus so they are free to fall when the bottommost module is released;
moving a middle finger between hold and release positions wherein it respectively holds the bottommost module against said die apparatus and releases the module to fall away from the die apparatus and stack;
maintaining an upper finger in a hold position above the die apparatus and against a penultimate module of the stack to prevent its free fall until a time after the middle finger moves to its release position, then moving the upper finger to a release position to permit free fall of the stack of modules, and then moving the upper finger back to its hold position; and
maintaining a lower finger in a hold position beneath the die apparatus and beneath the stack of modules when both said first and second fingers are in their release positions, and maintaining the lower finger in a release position out of the downward path of the modules at a time when the middle finger is in its release position and the upper finger is in its hold position to permit the bottommost module to fall away from the stack.

3,857,421

APPARATUS FOR FORMING LOOPS FROM SPRINGS

Joseph T. Gelardi, Yonkers, N.Y., assignor to American Technical Industries, Inc., Mount Vernon, N.Y.

Filed July 16, 1973, Ser. No. 379,245
Int. Cl. B21f *15/02, 45/00*
U.S. Cl. 140—71 R **11 Claims**



1. An apparatus for forming a loop from a helical spring having first and second hook portions at its opposite ends comprising means for holding the spring, said means including a pin for insertion into said first hook portion of the spring, a spring bending member defining a cavity for receiving the spring starting with the second hook portion and bending it toward the first hook portion, and guide means for controlling relative movement between the holding means and the spring bending member to cause engagement of the first and second hook portions when the second hook portion is inserted into the first hook portion to remain in engagement therewith after the pin is withdrawn.

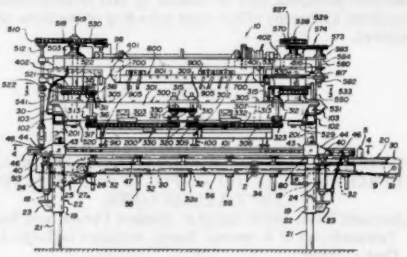
3,857,422

AEROSOL CONTAINER FILLING APPARATUS AND METHOD

Ernest R. Cunningham, Libertyville, Ill., assignor to Barr-Stalfort Company, Division Pittway Corporation, Niles, Ill.

Filed Feb. 4, 1972, Ser. No. 223,646
Int. Cl. B65b *3/04*
U.S. Cl. 141—3 **24 Claims**

1. An apparatus for fluid filling of containers traveling in a linear path and at a continuous motion, said apparatus comprising:
means for conveying containers to be filled in a linear path along the length of said apparatus;
means for supporting and maintaining each of said containers in spaced position from adjacent containers;
a dancer beam assembly means adapted for vertical reciprocating movement, said dancer beam assembly means positioned above said conveying means;
at least one walking beam means attached to said dancer beam assembly means;
said walking beam assembly means including drive means whereby said walking beam assembly means is adapted to move in an orbital path, a portion of said path being linear



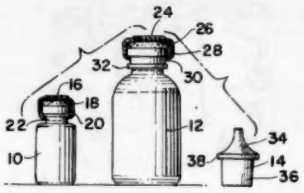
and in vertical alignment with the linear path of said containers when containers pass through said apparatus; and,
filling means connected to said walking beam assembly means for fluid filling containers when containers pass through said apparatus.

3,857,423

TOPICAL MEDICAMENT KIT WITH INTERLOCKING COMPONENTS

William E. Ronca, Jr., B4 Palma Sola, Garden Hills, Guaynabo, P.R. 00657

Continuation-in-part of Ser. No. 211,953, Dec. 27, 1971, abandoned. This application July 31, 1973, Ser. No. 384,376
Int. Cl. B65b *3/04*
U.S. Cl. 141—5 **6 Claims**

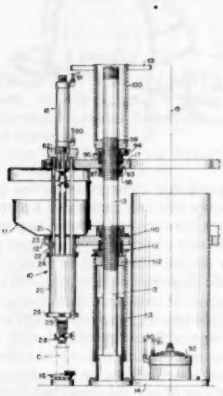


1. A kit for the sanitary preparation of a solution of predetermined concentration of a substance unstable in said solution comprising:
a. a small sealed glass vial having an annular collar and a neck of reduced diameter at its open upper end;
b. said vial containing a measured amount of said substance in concentrated form; and
c. a larger sealed resilient plastic bottle having an annular collar and a neck of reduced diameter at its open upper end;
d. said bottle containing a measured amount of a diluent for said concentrated substance;
e. the diameter of the annular collar of said glass vial being slightly different than the diameter of the annular collar of said plastic bottle so that the annular collar of said glass vial can be engaged with the neck of said plastic bottle in piggyback arrangement so that the contents of the vial and bottle can be shaken without spillage; and
f. the pressure within the piggyback arrangement can be altered by manual compression of the walls of said resilient plastic bottle, to accelerate the formation of said solution of predetermined concentration.

3,857,424
PISTON PRODUCT FILLER

Gary Francis Roberts, East Moline, Ill., assignor to The Kartridge Pak Co., Davenport, Iowa

Continuation-in-part of Ser. No. 209,813, Dec. 20, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,822
Int. Cl. B65b *3/32*; B67c *3/26*
U.S. Cl. 141—275 23 Claims



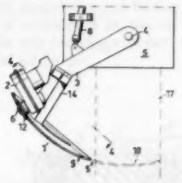
1. In an apparatus for filling containers with a measured amount of a liquid product from a source of supply which apparatus comprises elevated support means, at least one filling head mounted on said support means, each said filling head including a metering cylinder fixedly mounted on said support means and in communication with said source of supply through an inlet in the upper portion of said cylinder, a hollow nozzle in the bottom of said metering cylnder with an associated valve which is opened by upward pressure of a container to be filled, a hollow piston member movable in said cylinder, an adjustable stop limiting the upward movement of said hollow piston, a valve member operable to close on the piston member and thereby isolate a quantity of the liquid product in the bottom of each said metering cylinder and means to operate said valve member and thereafter to move said piston member when the valve associated with said nozzle is opened so as to discharge a predetermined amount of the liquid product through the nozzle and into the container.

3,857,425
TREE-FELLING DEVICE

Per Martin Wiklund, Taby, Sweden, assignor to Stiftelsen Skogsmekanisering, Bromma, Sweden

Filed Sept. 10, 1973, Ser. No. 395,503
Claims priority, application Sweden, Sept. 22, 1972, 12269/72
Int. Cl. A01g *23/08*
U.S. Cl. 144—34 R 6 Claims

1. Apparatus for felling trees and/or cutting wood with a saw blade, comprising a concave saw blade having a circular series of saw teeth about the periphery thereof, means mounting said saw blade for pendulous motion around the centroid

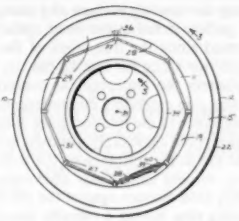


of said concave blade, and means for rotating said saw blade about an axis passing through said centeroid.

3,857,426
TREAD COVER FOR PNEUMATIC TIRE

James W. Reed, 1648 Vernon Dicks Dr., Eau Gallie, Fla. 32935

Filed Feb. 14, 1974, Ser. No. 442,591
Int. Cl. B60c *27/10*
U.S. Cl. 152—185 4 Claims



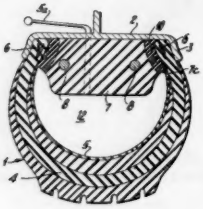
1. A tread cover for a pneumatic tire comprising an endless annular casing having an axis and a matrix of pliable vulcanized rubber material, said casing comprising an annular center portion which has opposite sides and is adapted to overlay the tread on the tire, and opposite annular marginal portions which are integrally joined to the center portion at the respective opposite sides thereof and which are spaced apart and respectively adapted to overlay the opposite side walls of the tire, each of said marginal portions having an endless edge that is offset from said center portion toward said axis, flexible annular means that is circumferentially inextensible and embedded in the casing matrix along the edge of one of said marginal portions, a plurality of elements which are fixed to and circumferentially spaced apart along the edge of the other marginal portion, reinforcing means having cord lengths which are embedded in said matrix and which extend transversely of the center portion to interconnect said elements and said flexible annular means, said other marginal portion having elastically deformable areas respectively located in the spaces between said elements, releasable means connected to said elements for maintaining said elements inwardly of said center portion during use of said cover, and a tread of vulcanized rubber material integrally joined to the center portion of said casing.

3,857,427

BULLET-PROOF TIRE

Josef Soucek, Av. Mofarrej, 476/500, Sao Paulo, Brazil

Filed Oct. 27, 1972, Ser. No. 301,265
Claims priority, application Brazil, Oct. 27, 1971, 007184
Int. Cl. B60c *17/04, 21/08, 9/02*
U.S. Cl. 152—196 26 Claims



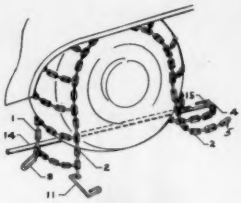
1. An inflatable tubeless tire for a motor vehicle, especially adapted for use as a bullet-proof tire capable of continued use though the pressurization of the tire is lost, including an outer surface forming the wearing surface and outside walls of the tire, an inner surface defining the inner space within the tire and beads formed along the free edges of the tire at the entrance to its interior space for seating the tire within the rim of a wheel, wherein the improvement comprises a separate elastic separating ring extending circumferentially for the full extent of the entrance to the interior space within said tire and extending between the oppositely disposed sides of the inner surface of said tire at the entrance to the interior space, said separating ring forcing said beads outwardly and securing them in a tightly held manner against the rim of a wheel, said elastic separating ring having a radially inwardly facing surface arranged to contact the rim of a wheel and a radially outwardly facing surface arranged in spaced relationship from the oppositely disposed inner surface of said tire, the radial dimension between the radially inwardly facing surface and the radially outwardly facing surface being appreciably greater than the radial dimension of the free edges of the tire which contact the rim of the wheel so that the radially outwardly facing surface is spaced radially into the interior space in said tire in spaced relationship from the radially outer portion of the free edges of the tire which contact the rim, said radially outwardly facing surface of said ring being spaced radially inwardly from the oppositely disposed inner surface of the tire which is located opposite the wearing surface, and means associated with said elastic separating ring for supplying air into the interior space defined by the inner surface of said tire and the radially outwardly facing surface of said separating ring so that under ordinary operating conditions when pressurized air is filled into the interior space said radially outwardly facing surface of said ring and the oppositely disposed inner surface of the tire are maintained in spaced relationship and, when the pressurized condition within the interior space in the tire is lost, the inner surface of the wearing surface of the tire is forced inwardly into contact with said radially outwardly facing surface of said ring with the side surfaces of the tire remaining spaced radially outwardly from the rim of the wheel so that the tire can continue to be used without damage to the side walls of the tire by the rim.

3,857,428

INSTANT TIRE CHAINS

Joseph R. Dolphin, 313 S. Davies Rd., Lake Stevens, Wash. 98258

Continuation-in-part of Ser. No. 212,216, Feb. 29, 1972,. This application May 30, 1973, Ser. No. 365,141
Int. Cl. B60c *27/06*
U.S. Cl. 152—241 6 Claims



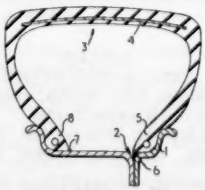
1. An elongated skid chain construction comprising a pair of spaced opposite side link chains and a plurality of cross link chains extending between and secured to pairs of corresponding links of said side chains at points spaced generally equally along said side chains, the spacing between corresponding end links of said side chains at one end of said skid chain construction and the adjacent cross link chain being at least generally equal to twice the spacing between pairs of adjacent cross link chains, an elongated hook member having a deep throated hook portion on one opening toward the other end of the hook member and an attaching eye on its other end engaged with one end link of one of said side link chains, said deep throated hook portion being removably engaged with the end link at the other end of said one side link chain, and an elongated cinching hook including an elongated arm portion terminating at one end in an outwardly directed and slightly backturned short arm portion terminating at its end remote from said elongated arm portion in an attaching eye engaged with one end link of the other side link chain, the other end of said elongated arm portion terminating in a U-shaped member disposed generally normal to said elongated arm member and opening toward the side of said elongated arm member opposite the side thereof from which said short arm portion projects, said U-shaped member being removably engaged with said other side link chain spaced from said one end link thereof.

3,857,429

TIRE AND WHEEL ASSEMBLIES

Reginald H. Edwards, Sutton Coldfield, England, assignor to Dunlop House, London, England

Filed July 31, 1972, Ser. No. 276,449
Claims priority, application Great Britain, Aug. 21, 1971, 39344/71
Int. Cl. B60c *17/00, 15/00*
U.S. Cl. 152—379 17 Claims



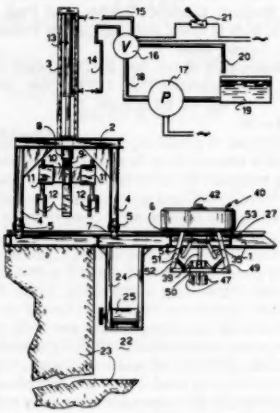
1. A pneumatic tire and wheel assembly capable of being run in a deflated condition comprising a wheel rim having a pair of flanges and bead seats and in which, adjacent at least

one bead seat, there is a circumferential notch; and a pneumatic tire comprising a tread, sidewalls and rubber covered beads for seating on the bead seats of the wheel rim, at least the bead on the bead seat adjacent said notch having a heel portion adjacent a wheel rim flange and a toe portion extending radially inwardly of the base of the bead, as a radially inwardly directed annulus the distal end of the annulus projecting freely into said notch and the extended toe and the notch being of a cross-sectional shape and size which permits said toe to be compressed into said notch upon tilting of the bead under the influence of lateral forces on the tire whereby said bead is restrained from movement axially across the wheel rim.

3,857,430
TIRE REMOVING APPARATUS

Paul-Emile Harnois, 76 Roy St., Notre Dame des Prairies, Quebec, and Raymond Lepine, 588 Querbes St., Joliette, Quebec, both of Canada

Filed Oct. 1, 1973, Ser. No. 402,352
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.2 **7 Claims**



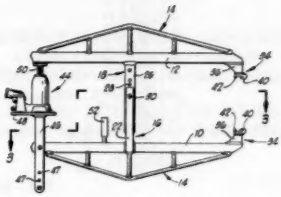
1. A tire removing apparatus operatively comprising, in combination, a fixed post, a wheel support fixedly mounted relative to and around said post and including fixedly spaced-apart wheel rests of graded sizes gradually decreasing toward one end of said post, an actuation device reciprocatively displaceable along said post toward and away from said wheel support, tire pushing members, each having a tire engaging portion engageable with the side wall of the tire of a wheel mounted on one of said rests, linkage assemblies pivotally connecting said tire pushing members respectively to said actuation device and to said post, camming elements fixedly secured relative to said wheel support and said post, and means engaging said tire pushing members and biasing the latter toward cam following engagement with said camming elements respectively.

3,857,431
TIRE REMOVAL TOOL

Elbert I. Boyle, Rt. 1, Ripley, Okla.

Filed Oct. 10, 1972, Ser. No. 296,337
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.26 **6 Claims**

1. A tire removal tool comprising:
a pair of elongated arms pivotally interconnected intermediate their length;
a jaw carried on one end of each of said arms so that said jaws face each other, each of said jaws being inset from the arm upon which it is carried toward the other of said arms, and including:
a flat face; and
an arcuate bead extending along one edge of the face;
a pivoted jack supporting rod having an intermediate portion thereof connected to one of said arms at its end opposite the end carrying said jaw, and projecting toward the other of said arms;

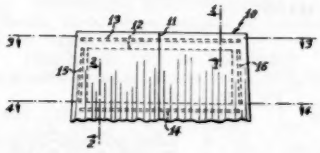


a mounting plate secured to the end of said jack supporting rod nearest said other arm;
a hydraulic jack having a base secured to said mounting plate and extending from said mounting plate to said other arm at its end opposite the end which carries said jaw for biasing the jaws in pivotal movement relative to each other; and
a handle projecting from one of the arms toward the other arm for holding the tool in a tire removing position.

3,857,432
CURTAIN AND ATTACHED AIR SEAL

David E. Russell, 110 Riverside Ave., Jacksonville, Fla. 32202

Filed Dec. 3, 1973, Ser. No. 420,927
Int. Cl. A47h *1/00*
U.S. Cl. 160—124 **10 Claims**



1. In combination a curtain for hanging over a window or the like subject to convective air currents in space between a window or the like and said curtain, and a sealing means including connecting means attached to said curtain and extending substantially fully thereacross to dispose said sealing means in a generally horizontal position in space between said curtain and adjacent a window or the like when said curtain is hung in a position overlying a window or the like, said sealing means being effective to close a portion of space between said curtain and adjacent a window or the like thereby to reduce vertical air flow therefrom, said sealing means being foldable with said curtain.

3,857,433

FOLDABLE SHUTTER

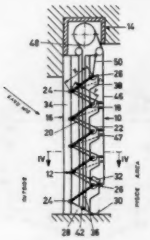
Walter Gatzi, Zurich, Switzerland, assignor to Matallbau AG Zurich, Zurich, Switzerland

Filed Mar. 19, 1973, Ser. No. 342,866

Claims priority, application Switzerland, Mar. 23, 1972, 4312/72

Int. Cl. E06b 9/30

U.S. Cl. 160—172 20 Claims



1. A foldable shutter comprising slats, means for hingedly connecting the slats with one another, said slats having operatively associated with each of their respective opposed ends a respective guide bolt, guide rail means having guide surface means with which cooperate said guide bolts, said guide rail means further incorporating control channel means extending substantially parallel to the associated guide surface means of the guide rail means and in which there is guided an associated end portion of the shutter, a drawband for the shutter, support means provided for said guide rail means, each end of the slats carrying a stop pin arranged in substantially parallelly offset relationship with respect to the associated guide bolt and cooperating with said support means provided for the guide rail means, the spacing of the support means from the guide surface means of the guide rail means being smaller than the spacing between the guide bolts and the stop pins and wherein the control channel means extends between the guide surface means and the support means.

3,857,434

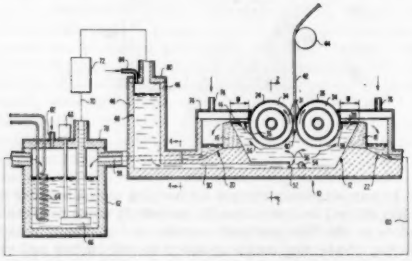
ROLL-COUPLE, CONTINUOUS-STRIP CASTING

Erich F. Wondris, Pittsburgh, Pa., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Mar. 21, 1973, Ser. No. 343,493

Int. Cl. B22d 11/06

U.S. Cl. 164—5 26 Claims



1. Continous-strip casting apparatus, comprising

means including walls defining a vessel for molten material having a surface,

strip-forming means including a pair of roll members having length,

means mounting the roll members to provide a roll nip therebetween and to position the roll members in the vessel with the peripheries of the roll members being partially immersed in the molten material along at least a portion of the length of the roll members,

the walls of the vessel comprising means including a pair of opposed weir members for overflowing molten material from the vessel,

the roll members being positioned between the weir members,

each weir member being spaced across an unobstructed portion of the surface of the molten material from an adjacent roll member,

and conduit means for feeding molten material into the vessel below the surface of the molten material for flow upwardly toward the roll nip and toward the unobstructed portion of the surface between each weir and the adjacent roll member.

3,857,435

PROCESS FOR MAKING SOLUBLE CORES

Edward F. Burkert, Garfield Heights, and Paul A. Guinn, Brecksville, both of Ohio, assignors to The Freeman Supply Company, Toledo, Ohio

Continuation-in-part of Ser. No. 245,302, April 19, 1972, abandoned. This application Nov. 1, 1973, Ser. No. 411,897

Int. Cl. B22c 9/04, 7/02

U.S. Cl. 164—36 17 Claims

1. In the process of producing investment castings wherein a pattern that is removable by heating is coated with a refractory forming material, the material is hardened, the pattern is removed to leave a void, and molten metal is put into the void to form a casting, the improvement comprising:

a. forming at least a portion of the pattern from a water decomposable form that contains an organo-ring material from the group consisting of: 5 and 6 membered nitrogen containing organo-ring compounds, fused 5 and/or 6 membered organo-ring compounds having as a ring constituent at least one nitrogen atom per every two rings of the compound, water soluble substitution products of said compounds, polymers of said compounds, and polymers of said substitution products of said compounds;

b. and washing the decomposable form away with an aqueous liquid before coating the remaining pattern with the refractory forming material.

3,857,436

METHOD AND APPARATUS FOR MANUFACTURING MONOCRYSTALLINE ARTICLES

Dmitry Andreevich Petrov, ulitsa Chkalova, 21, kv. 80, and Alexei Tikhonovich Tumanov, ulitsa B. Gruzinskaya, 36, kv. 58, both of Moscow, U.S.S.R.

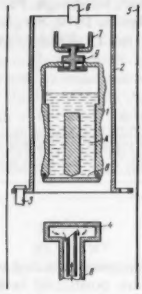
Filed Feb. 13, 1973, Ser. No. 332,208

Int. Cl. B22d 25/06

U.S. Cl. 164—60 10 Claims

1. A method of manufacturing monocrystalline articles comprising the steps of pouring molten metal into a mould comprising a main top cavity following the article shape and an auxiliary bottom cavity adjacent thereto and made in the form of a downwardly enlarging truncated cone, said cone having a horizontally extending wedge-shaped projection at the lower base thereof, which defines the base of said mould; cooling the base of said mould by means for cooling thereof so as to create the most abrupt supercooling of the melt at the point of said wedge-shaped projection, to form at this point a

sole natural crystal seed and to ensure its rapid propagation over the entire perimeter of said base; and subsequent gradual



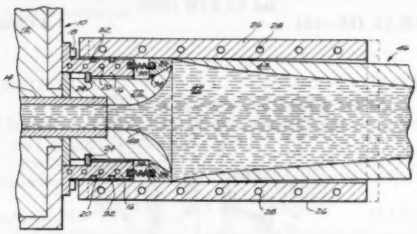
cooling of said mould from the bottom up to effect the crystallization proper.

3,857,437

METHOD AND APPARATUS FOR CONTINUOUSLY CASTING METALS

Leonard Watts, Cedarhurst, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,755
Int. Cl. B22d *11/10*
U.S. Cl. 164—83 **15 Claims**



1. A process of continuously casting an elongated metal article, utilizing a mold having a molten metal inlet, a cooled tubular wall structure and an open outlet end for the issuance of a casting therefrom in at least partially solidified form, and comprising the steps of:

introducing molten metal into said mold from a source for contact and solidification against said wall structure to form a casting skin which increases in thickness in the direction of said mold outlet as the casting is relatively moved along the mold in the casting direction;

relatively withdrawing the casting from the mold at the open outlet end continuously at an average casting rate;

oscillating said mold relatively to the casting for movement forwardly in the casting direction and rearwardly, at least a portion of said forward mold movement being faster than said casting rate; and

compressing the casting skin axially and radially inwardly by the mold during each forward movement of the mold for enhanced thermal transfer from the casting.

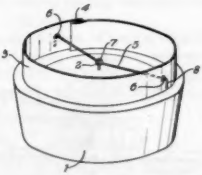
10. Apparatus for continuously casting an elongated metal article, comprising: a mold having a molten metal inlet in communication with a source of molten metal and having a cooled tubular wall structure and an open outlet end for issuance of a casting therefrom in at least partially solidified form, said wall structure having an internal surface area against which the molten metal has contact and forms a skin increasing in thickness in a direction toward said mold outlet end as the casting is relatively moved along the mold in a casting direction, said wall structure having in said area a surface portion gradually increasing in cross sectional size in the direction of said mold outlet end for contact with and thermal transfer from the casting in the area of the latter initially undergoing solidification, means relatively withdrawing the casting continuously from said mold, and an oscillating device oscillating said mold relatively to the casting for movement of the former forwardly in the casting direction and rearwardly in the opposite direction, at least a portion of said forward mold movement being faster than the rate at which the casting is relatively withdrawn from the mold.

3,857,438

COMBINATION PLUG-SPLASH CAN AND METHOD OF USING SAME DURING CASTING

Raymond Snowdon, Birmingham, England, assignor to Foseco Trading A.G., Chur, Switzerland

Filed May 24, 1973, Ser. No. 363,315
Claims priority, application Great Britain, May 26, 1972, 25059/72
Int. Cl. B22d *7/12*
U.S. Cl. 164—137 **3 Claims**



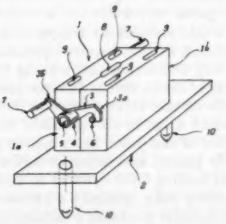
1. The combination for use in casting molten metal into ingot moulds having an apertured base plate comprising a plug for the aperture in the base plate, said plug being a solid frusto-cone of refractory material, a splash can, and means for fixing the splash can to the plug, said splash can being a hollow metal cylinder coaxial with the frusto-conical plug, the height: diameter ratio of the cylinder being 1:10 to 1:1, and the fixing means comprising a ring set in the upper face of the plug with a wire rod engaging the splash can at two opposite points and passing through the ring.

3,857,439

CONTINUOUS KINEMATIC TYPE MACHINE FOR PRODUCING FOUNDRY CORES

Gerard Bardet, Paris, France, assignor to Automatisme Et Technique, Arcueil, France

Filed Jan. 26, 1973, Ser. No. 326,875
Claims priority, application France, Feb. 2, 1972, 72.03503
Int. Cl. B22c *13/12*
U.S. Cl. 164—186 **10 Claims**



1. A machine operable in a continuous kinematic manner for the production of foundry cores with the aid of core boxes,

the machine comprising a rotatable feed barrel for receiving such boxes, a rotatable shot injection barrel for filling the boxes with a moulding mixture, a rotatable hardening barrel for hardening the moulding mixture in the boxes to form cores, a rotatable barrel for ejecting the cores from the boxes and cleaning the boxes, means for receiving ejected cores from said last-mentioned barrel and conveying them away, driving means for continuously rotating all of said barrels in synchronism, and means for transferring the boxes from each of said barrels to the next barrel in succession in a closed circuit in which said ejecting and cleaning barrel transfers cleaned empty boxes to said feed barrel for recirculation in said circuit.

3,857,440

DIE CASTING MACHINE

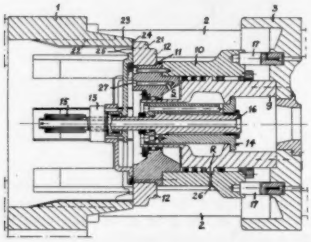
Edwin Ruegg, Netstal, Switzerland, assignor to Maschinenfabrik und Giesserei Netstal AG

Filed Mar. 14, 1973, Ser. No. 341,111

Claims priority, application Switzerland, Mar. 22, 1972, 4236/72

Int. Cl. B22d *33/04*

U.S. Cl. 164—341 **9 Claims**



1. In a die casting machine having a mold closing and locking unit including a first hydraulic device operable to move a movable mold support, guided on columns extending between a supporting yoke and another mold support at the injection side, from an open position to a closed position and inversely, and a second hydraulic device operable to produce the mold locking force, with the first hydraulic device including pistons secured to the movable mold support and arranged symmetrically to the axis of movement thereof, and operating in working cylinders mounted in the supporting yoke, the improvement comprising, in combination, said second hydraulic device comprising a piston secured centrally to said movable mold support and operating in a non-rotatable locking force cylinder; four guide rods reciprocable in said supporting yoke and secured to said movable mold support to absorb the tilting moment produced by said second hydraulic device; a force transmitting ring embracing said locking force cylinder and fixed against axial displacement thereon; said ring being angularly adjustable on said locking force cylinder between a first position, in which it can be moved axially into openings in the adjacent surface of said yoke, and a second position, in which it bears axially against said adjacent surface to transmit the loading of said locking force cylinder to said adjacent surface of said supporting yoke; whereby a pressure loading of said locking force cylinder produces a locking stroke, of said second hydraulic device, of only a few millimeters in length, said piston of said second hydraulic device being a tubular piston; and a hydraulic ejector device concentrically disposed within and axially reciprocable through said tubular piston.

3,857,441

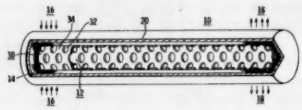
HEAT PIPE WICK RESTRAINER

Frank G. Arcella, Bethel Park, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1970, Ser. No. 17,106

Int. Cl. F28d *15/00*

U.S. Cl. 165—105 **7 Claims**



1. A heat pipe comprising a sealed tubular outer casing, a tubular wick structure positioned in said outer casing and closely received by the inner surface thereof, and a tubular substantially nonresilient, wick restrainer position within said casing and closely received by the inner surface of said wick structure, said wick restrainer being formed to provide uniform support to said wick structure, to maintain the same in engagement with said inner surface of said outer casing.

3,857,442

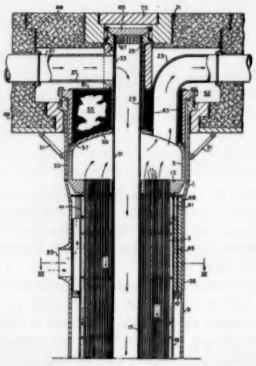
HEAT EXCHANGER HAVING A HEAD WITH AN INTEGRAL RADIATION SHIELD

Louis A. Sturiale, Tampa, and Remco P. Waszink, St. Petersburg, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 12, 1971, Ser. No. 132,975

Int. Cl. F28f *19/00*

U.S. Cl. 165—134 **4 Claims**



1. A heat exchanger for transferring heat from a primary radioactive fluid to a secondary fluid, said heat exchanger comprising a shell, and a tube bundle disposed in said shell, said tube bundle having a stationary head and a floating head, a plurality of generally straight tubes extending between said heads, a centrally disposed tube substantially larger than said generally straight tube, and an outer sleeve enwrapping the generally straight tubes, said centrally disposed tube and said outer sleeve forming an annular space through which the generally straight tubes extend, the outer sleeve having a plurality of openings adjacent the stationary head and adjacent the floating head, said stationary head having inlet and outlet conduits for allowing secondary fluid to flow through said tube bundle, and a radioactive shield associated therewith

so that said secondary fluid inlet and outlet conduits may be disconnected from said stationary head and said stationary head can be disconnected from said shell and said heat exchanger further comprising primary fluid inlet and outlet conduits and a seal ring disposed between said shell and said outer sleeve to cause the primary fluid to flow from said primary inlet conduit through said openings in one end of said outer sleeve, through said annular space in counterflow relation to the secondary fluid flowing through said straight tubes and through openings in the other end of said outer sleeve, and then to said primary outlet conduit, and a space between said outer sleeve and said shell providing a quiescent zone for said primary liquid.

3,857,443
SEALANT

Robert C. Cole, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 771,631, Oct. 29, 1968, Pat. No. 3,649,574. This application July 29, 1971, Ser. No. 167,447
Int. Cl. E21b *33/13, 33/14;* **E21d** *5/11*
U.S. Cl. 166—295 **21 Claims**

1. A method of filling a void contained in an earth formation with a flexible material comprising dissolving an acrylamide monomer, which exhibits hydrogen bonding, and a polyfunctional crosslinking agent, selected from the group consisting of alkylidene bisacrylamide, polyethylenic compounds derived from allyl alcohol and mixtures thereof, in a diol, selected from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol, polyethylene glycol, propylene glycol, 1,4-butene glycol and mixtures thereof; mixing the resulting solution with a polyol containing at least three hydroxyl groups; and injecting the resulting composition into a void in an earth formation.

3,857,444
METHOD FOR FORMING A CONSOLIDATED GRAVEL PACK IN A SUBTERRANEAN FORMATION

Claude T. Copeland, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 295,732, Oct. 6, 1972, abandoned. This application Feb. 2, 1973, Ser. No. 329,139
Int. Cl. E21b *43/02*
U.S. Cl. 166—276 **12 Claims**

1. A method of forming a permeably consolidated particulate mass in communication with a permeable subterranean formation which comprises:

a. forming a pumpable slurry by mixing together a particulate material, an epoxy resin-solvent mixture, a curing agent, a coupling agent and a carrier liquid, said particulate material is present in an amount ranging from about 7 to about 20 pounds per gallon of liquid in said slurry, said resin-solvent mixture comprises an epoxy resin and an organic solvent for said resin comprising a mixture of an acetate and a glycol ether, and said resin being present in an amount ranging from about 2 to about 10 pounds per 100 pounds of particulate material,

b. introducing said slurry through a well bore and into communication with said permeable formation, and

c. curing said slurry in place to form a consolidated permeable mass.

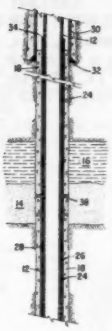
3,857,445
CONTROLLED CASING SLEEVE

Lawrence N. Mower, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Mar. 2, 1973, Ser. No. 337,612
Int. Cl. E21b *33/00*
U.S. Cl. 166—285 **7 Claims**

1. A method of completing a well drilled in a subterranean formation in which at least a portion of said formation is subject to being compacted as fluid is produced therefrom which comprises:

a. providing a section of casing with a sleeve means to form a modified casing section in which said sleeve means includes at least one cylindrical sleeve element held to



said casing by means having less shear bond strength than normal well cement,

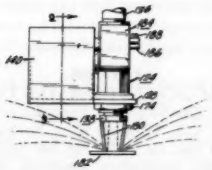
b. connecting said section of casing into a casing string,

c. lowering said casing string into said wellbore until said modified section is the same level as said portion of said formation which is subject to compaction.

3,857,446
TEMPERATURE-SENSITIVE SNAP-ACTION VALVE

Thomas M. Kenny, 13 Cobblestone Dr., Paoli, Pa. 19301

Filed May 22, 1974, Ser. No. 472,095
Int. Cl. A62c *37/06*
U.S. Cl. 169—60 **4 Claims**



1. A fire extinguishing system automatic thermally actuated sprinkler valve assembly comprising a base, a fluid conduit on said base adapted for connection to a source of high pressure fluid, valve means in said fluid conduit for controlling flow therethrough, a splash plate assembly secured beneath said base aligned with said fluid conduit, a temperature-sensitive actuator mounted on said base, and a spring linkage assembly operatively connecting said actuator with said valve means, said spring linkage assembly comprising a valve member pivotally mounted on said base and operatively connected with said valve means, an actuator member pivotally mounted on said base for rotation about an axis spaced from and parallel to the pivot axis of said valve member, said actuator operatively engaging said actuator member to permit rotation of said actuator member in response to temperature variations, and a tension spring having one end thereof attached to said actuator member at a point remote from its pivot axis, the opposite end of said spring being connected to said valve member at a point remote from its pivot axis, said spring urging said actuator member in rotation toward said actuator, said spring normally urging said valve member in rotation to hold said valve means fully closed, said spring passing over center upon a predetermined temperature condition to urge

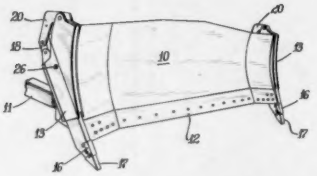
said valve member in the opposite rotational direction, thereby fully opening said valve means with a snap action and permitting high pressure fluid to strike said splash plate assembly.

3,857,447

BULLDOZER BLADE WITH VIBRATING RIPPER SHANK

Ronald E. Adams, Dubuque, Iowa, and Eugene M. Wilson, Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 11, 1974, Ser. No. 432,495
Int. Cl. E02f 3/12
U.S. Cl. 172—777 7 Claims



1. In combination with a bulldozer having a blade with a lower ground-engaging edge, the improvement comprising:

a socket forming at least one end of said blade and positioned so that the lower portion of said socket is forward of the upper portion with respect to the direction of travel of the bulldozer,

a ripper shank mounted within said socket and movable between an extended position wherein it extends below said ground-engaging edge,

means in said socket intermediate the ends of said ripper shank to support said ripper shank and define a pivot point for said ripper,

means connected to the upper portion of said ripper shank to move said shank in a generally oscillatory motion about said pivot point in a direction corresponding to the forward and backward motion of the bulldozer, and

means to extend said ripper from and retract said ripper into said socket.

3,857,448

HYDRAULICALLY OPERATED TAMPER

Raydon A. Lines, Elizabeth West, Australia, assignor to Proline Industries Pty. Ltd., Elizabeth West, Australia

Filed Nov. 10, 1972, Ser. No. 305,356
Claims priority, application Australia, Nov. 15, 1971, 7030/71
Int. Cl. B25d 9/14
U.S. Cl. 173—134 2 Claims

1. In a fluid operated tamper comprising a housing providing a cylinder bore in which a piston rod supporting a hammer head is disposed for reciprocation during forward and return strokes: a pressure chamber in the housing for receiving operating fluid under pressure to be communicated to said cylinder bore through supply port means located along the axis of the cylinder bore, said piston rod presenting a piston of predetermined large area and a rear wall of smaller area, first and second ducts within said housing communicating with the bore of the cylinder and each duct opening respectively into opposite ends of a valve chamber which has a fluid operated shuttle valve therein, said valve being cycled by alternately pressurizing and exhausting the opposite ends of said valve chamber, valve means on said piston rod whereby said ducts in the cylinder bore are alternately covered and uncovered with respect to said supply port means during reciprocation of the piston rod thereby to furnish operating fluid alternately to said ducts for pressurizing alternate ends of said valve chamber to operate the shuttle valve, pressure and exhaust ports in said valve chamber for translating fluid to and from the piston and the piston rod rear wall, said shuttle valve in one position communicating said pressure port to the head of the piston while concurrently communicating the exhaust port to said rear wall and vice versa in a second position of the shuttle valve thereby to reciprocate the piston rod in forward and return strokes, and a starting valve means to start reciprocation of the piston rod when the valving means on the piston rod close both of said ducts, said starting valve means comprising a three position manually operated valve operating in a valve bore and affording:

a. a main port for fluid under pressure to operate said tamper, being closed by the starting valve in a first position, and passage means for connecting said main port to the pressure chamber in the housing and to one of the ends of the shuttle valve chamber and to the pressure port of the shuttle valve;

b. said starting valve having a second position where said main port is so connected to said passage means thereby to furnish operating fluid under pressure to said pressure chamber, to one end of said shuttle valve chamber and to the pressure port of the shuttle valve; and

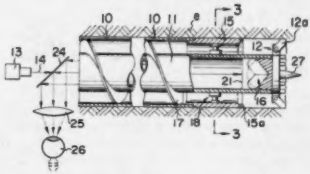
c. said starting valve having a third position where communication is disestablished between said main port and said one end of the shuttle valve chamber while maintaining communication between said main port and the passages leading therefrom to said supply chamber and the pressure port of the shuttle valve.

3,857,449

APPARATUS FOR PRECISELY THRUSTING PIPES INTO THE GROUND

Yoshita Kimura, c/o Kogane; Sky-cooporas 807, No. 40-1, 3-chome, Maehara-cho, Tokyo, Japan

Filed July 5, 1973, Ser. No. 376,316
Claims priority, application Japan, July 11, 1972, 47-69239; Dec. 15, 1972, 47-125981; Feb. 26, 1973, 48-22978; Apr. 20, 1973, 48-37575
Int. Cl. E21b 47/02
U.S. Cl. 175—26 10 Claims



1. An apparatus for precisely thrusting a pipe into the ground along a predetermined straight guide line, comprising: a straight guide tube normally substantially coaxially inserted in the pipe and having its foremost end extending therefrom, said guide tube being axially and rotationally movable relative to the pipe;

auger means coaxially removably attached to the foremost end of said guide tube for excavating the front soil when rotated and thrusted forward together with said guide tube;

a parallel reflector mounted in a relatively front portion of said guide tube in the vicinity of said auger means and having a critical optical path coincident with the axis of said auger means, said parallel reflector having such optical characteristics as to have reflected light rays fol-

low said critical optical path, when incident light rays follow the same, and as to produce reflected light rays in parallel with incident light rays which have missed said critical optical path;

a highly directive light source disposed on a rear extension of the axis of said guide tube for normally emitting as the guide line a highly directive light beam in the forward direction along said critical optical path;

displacement detecting means for detecting displacement, if any abnormally, of the common axis of said auger means and said guide tube from the guide line in terms of displacement of the backward highly directive light beam, which is reflected on said parallel reflector, from the forward highly directive light beam which is emitted from said light source; and

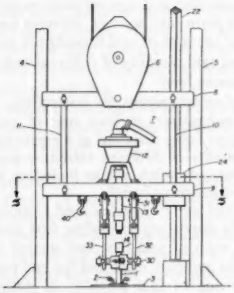
displacement correcting means interposed between the relatively front portion of said guide tube and a corresponding front portion of the pipe and responsive to the displacement of the highly directive light beam for deflecting said guide tube relative to the pipe in the direction to reduce the last-mentioned displacement substantially to zero, so that the course of said guide tube and accordingly of the pipe may follow precisely in the guide line.

3,857,450

DRILLING APPARATUS

William Guier, 3100 E. 71st St., Tulsa, Okla. 74136

Filed Aug. 2, 1973, Ser. No. 384,802
Int. Cl. E21b *19/06, 19/16*
U.S. Cl. 175—85 **6 Claims**



1. A drilling rig structure, including,

a rail extended vertically adjacent a bore,

a frame arranged to be guided in vertical travel on the rail and over the bore,

a traveling block attached to the frame,

a drawworks connected to the traveling block so the drawworks can raise and lower the frame over the bore,

a swivel mounted on the frame and below the traveling block, the swivel arranged to be connected to receive drilling fluid from a source and deliver the fluid to a hollow sub,

a sub in the form of a hollow driving shaft mounted on the swivel so as to extend down into alignment with the bore and connect with drill pipe to deliver drilling fluid to the drill pipe while rotating the drill pipe,

a gear train extended to connect the sub to the drawworks for selective rotation of the sub,

a bail pivoted by one end from and extending below the frame,

a power means connected to the frame and to the bail below its pivot point to move the other end of the bail through a predetermined arc,

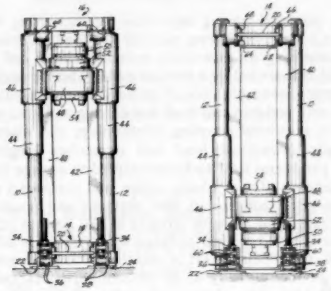
and an elevator mounted on the lower end of the bail so the elevator is pivoted to latch about pipe and move the pipe into and out of vertical alignment with the bore for connection and disconnection with the sub without the remaining structure on the frame being moved from its vertical alignment with the bore.

3,857,451

INVERTIBLE DRILLING MACHINE

William C. Williams, Seattle, Wash., assignor to The Robbins Company, Seattle, Wash.

Filed Mar. 15, 1973, Ser. No. 341,558
Int. Cl. E21c *5/11*; **E21b** *19/16*
U.S. Cl. 173—152 **4 Claims**



1. An end mounted invertible drilling machine that is detachably mountable onto a floor emplaced base structure, said machine comprising:

first and second opposite end frame members, each said end frame member including pivot pin receiving means to receive a pivot pin for pivotally attaching it to the base structure and connector means spaced therefrom, for connection to an end of at least one adjustable connector which is interconnectable between the base structure and the end frame member that is selected for connection to the base structure, to provide a way of adjusting the angle of the drilling line regardless of which end frame member is mounted onto the base structure, said first end frame member including a worktable, a drill pipe avenue formed through said worktable, an inboard holding wrench retainer on said worktable for use during down drilling, and an outboard holding wrench retainer on said worktable for use during up drilling;

guide column means including at least two laterally spaced apart guide columns which are rigidly interconnected between said end frame members;

rotary drive means including a drive head connectable to drill pipe sections, said drive head being directed towards the drill pipe avenue in said first end frame member, and motor means for rotating said drive head and any drill pipe connected thereto;

travelling cross-frame means mounting said rotary drive means onto said guide column means for travel therealong; and

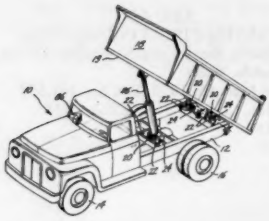
linear drive means for moving said cross-frame means along said guide column means both towards and away from said first end frame member.

3,857,452

DUMP TRUCK LOAD-SENSING ASSEMBLY

James M. Hartman, Renton, Wash., assignor to Tri-Coastal Industries Inc., Seattle, Wash.

Filed Feb. 14, 1974, Ser. No. 442,375
Int. Cl. G01g 19/08, 3/14
U.S. Cl. 177—139 11 Claims



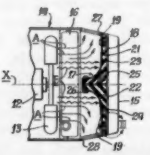
1. A pin load-sensing apparatus for measuring the load between a load transferring member and load receiving members comprising an essentially cylindrical load cell integral with and surrounded by a tubular collar wherein said tubular collar comprises a plurality of cylindrical sections adapted to engage with and join said load transferring and load receiving members in pivotal coupling relationship, and wherein said essentially cylindrical load cell comprises longitudinally spaced peripheral land surfaces adapted to engage the cylindrical sections of said tubular collar, and peripheral recessed surfaces intermediate said land surfaces and positioned to concentrate axial moment stresses at the bottom peripheral portions of said recessed surfaces when a load is applied to said cell, there being a set of electrical strain gauges operationally bonded directly to the bottom peripheral portion of each of said peripheral recessed surfaces in a manner to enable said gauges to respond to differential axial moment stresses therein resulting from deformation of said load cell due to a loading force being exerted on said load cell by said load transferring member.

3,857,453

NOISE SUPPRESSION MEANS FOR TRACTORS

Frederic P. Buttke, Peoria, and Theodore D. Mathewson, Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 21, 1974, Ser. No. 444,316
Int. Cl. B60k 1/00
U.S. Cl. 180—54 A 9 Claims



1. A mobile vehicle disposed for movement along a longitudinal axis thereof comprising

an engine,

an enclosure for said engine having at least one air outlet formed through a lateral side thereof adjacent to a forward end of said engine and terminating at its forward end at a guard member completely covering a forward end of said engine and

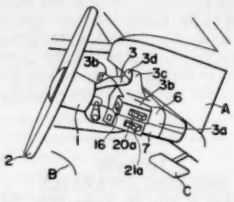
acoustical energy absorption means extending transversely relative to said axis and disposed between a forward end of said engine and said guard member to completely cover a back side of said guard member and disposed thereon to guide air from said engine towards said air outlet.

3,857,454

SWITCHES MOUNTING MEANS FOR USE IN A MOTOR-VEHICLE

Hirotsugi Kobayashi, Nagoya; Takehiko Nishikawa, Inazawa; Shinya Ito, and Yasuhiko Ibuka, both of Aichi, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi-ken, Japan

Filed Mar. 2, 1973, Ser. No. 337,368
Claims priority, application Japan, Mar. 3, 1972, 47-26268
Int. Cl. B60k 27/00
U.S. Cl. 180—78 7 Claims



1. An apparatus for mounting various switches controlling different mechanisms in a motor-vehicle comprising:

a housing mounted around a motor-vehicle steering column, said housing having a plurality of different extremity portions, and said housing including first and second sections, said first and second sections being connected together to form said housing, wherein each of said first and second sections of said housing are provided with at least one of said plurality of different extremity portions of said housing, and

a plurality of switch means for controlling various motor-vehicle mechanisms, at least one of said plurality of switch means being disposed at a respective one of each of said plurality of different extremity portions, each of said plurality of switch means including a switch and a transparent indicator panel,

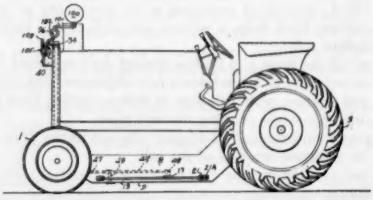
wherein each of said first and second sections of said housing include oppositely extending first and second wing members, each of said first and second wing members having a flat end part, each said flat end part forming said respective one of said plurality of different extremity portions of said housing.

3,857,455

ROW CENTERING GUIDE CONTROL DEVICE FOR BUSH BEAN HARVESTER

James E. Ernst, Star Rt., Box 58 A, St. Paul, Oreg. 97137

Filed May 21, 1973, Ser. No. 361,889
Int. Cl. B62d 5/06
U.S. Cl. 180—79.2 R 3 Claims



1. In an agricultural harvesting machine having a chassis supported upon steerable ground engaging front wheels and

ground engaging rear traction wheels, the improvement comprising:

an underslung scow carried by the machine and extending lengthwise thereof,

a frame pivotally attached to said scow and extending outwardly and rearwardly relative thereto for engagement with proximal row crops,

a switch actuating arm pivotally attached at one of its ends to said frame and pivotally attached intermediate its ends to said scow,

the forward end of said switch actuating arm movable between a first pair of spaced apart steering control switches and adapted to alternately actuate said switches upon right or left deviation in the course of travel of said machine along the row crops,

said chassis including a steering yoke supporting said steerable front wheels,

a tierod carried by said yoke and connected to said steering wheels for steering the same,

a steering cylinder carried by said yoke and having a piston operable therein and connected to said tierod whereby movement of the piston to the right or left within said cylinder will impart corresponding steering angles to said steering wheels,

a fluid pressure cylinder carried by said machine,

a valve operable within said fluid pressure cylinder,

one side of said fluid pressure cylinder in communication at both of its ends with the corresponding ends of said steering cylinder,

the other side of said fluid pressure cylinder connected to a fluid pump and a fluid reservoir,

said valve connected at each of its ends to a solenoid mounted upon each end of said fluid pressure cylinder,

a second pair of electric switches each in circuit with a solenoid and each operable by movement of said tierod to maintain said steering wheels in alignment with the tractor centerline after return of the chassis to a desired path between the row crops causing deactivation of said steering control switches,

all of said switches in electric circuitry with each other and with a source of electric current carried by said machine, each of said switches being of the single pole double throw type,

each of said solenoids having a core connected to said valve, one end of each of said solenoids having a ground connection to said source of electric current,

the opposite end of one solenoid electrically connected to one side of one switch in said first pair of switches and to the corresponding side of the other switch in said second pair of switches, and

the opposite end of the other side of said solenoids electrically connected to one side of the other switch in said first pair of switches and to the corresponding side of the other switch in said second pair of switches.

3,857,456

AIR CUSHION CRAFT AIR SUPPLY

John R. Schrink, Gautier, Miss., assignor to Little Systems, Inc., Beverly Hills, Calif.

Filed Apr. 30, 1973, Ser. No. 355,509
Int. Cl. B60v *1/00*
U.S. Cl. 180—121 **5 Claims**

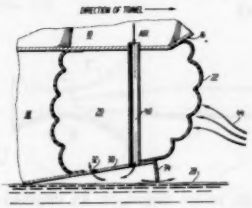
1. A vessel having a periphery about a hull and suspended upon a large, central air cushion during transport over a surface comprising:

a. at least one air cushion cell disposed depending from at least a bow section of said periphery forming a bow seal for said larger, central air cushion;

b. each said cell including a flexible wall and capable of vertical compression, and being fixed at its upper end to said periphery of said vessel;

c. each said cell further including a rigid base having an orifice therein for allowing air to pass therethrough, said rigid base disposed oriented at a planing angle relative to said surface, and having a portion of said rigid base in substantial contact with the said surface;

d. a chamber of air defined between the said surface and the lower side of said rigid base; and



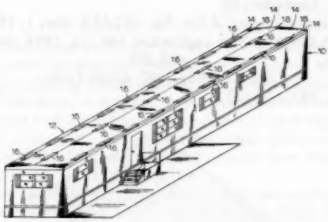
e. air conduit means disposed in pneumatic contact beneath said rigid base with said chamber, said conduit means receiving air under pressure from a central air pressure source.

3,857,457

DEVICE FOR INHIBITING VIBRATORY ROOF NOISE

Richard B. Fox, R.D. No. 1, York Haven, Pa. 17370

Filed Dec. 11, 1973, Ser. No. 423,755
Int. Cl. E04b *1/84*
U.S. Cl. 181—33 A **5 Claims**



1. A mobile home type structure having sheet-like roof panels covering the top thereof, in combination with means to prevent vibration of said roof members from wind and the like, said means comprising a plurality of weight members positioned upon said roof in spaced relationship to each other, said weight members comprising flexible liquid-tight bag-like containers containing an amount of fluid less than the full capacity of said members so that when spatially positioned upon said roof said members will stabilize said roof panels against vibration, whereby the flexible nature of said containers minimizes possible abrasion or other damage to said roof resulting from said weight members being supported upon said roof by gravity and the limited amount of fluid therein permits said members to flexibly engage said roof panels in close adaptability thereto, thus enabling said weighted members to conform to any irregularities in said roof panels and thereby prevent dislodgment of said weighted members from said roof panels consequent from the effects of wind or other vibratory causing effects.

3,857,458

EXHAUST GAS OUTLET MEANS FOR AN INTERNAL COMBUSTION ENGINE

Toshio Ohtani; Takahiro Sato, and Fukishi Sumitomo, all of Hiroshima-ken, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

Filed Sept. 6, 1973, Ser. No. 394,817

Claims priority, application Japan, Sept. 11, 1972, 47-106373; Oct. 17, 1972, 47-120380

Int. Cl. F01n *1/14, 3/04*

U.S. Cl. 181—43 4 Claims

1. Exhaust gas outlet means for an internal combustion engine, the outlet means comprising: an elongated exhaust pipe having a predetermined diameter through a portion of its length, and an outlet end whose cross-sectional configuration is gradually flattened in a first plane into a converging nozzle, and whose cross-sectional configuration is V-shaped in a second plane transverse to said first plane to define a diverging nozzle, the cross-sectional area of said outlet end being at least equal to that of the exhaust pipe in the said portion of its length having a predetermined diameter, and an open-ended fresh air suction pipe disposed around and with a clearance from the exhaust pipe and having a portion of reduced cross-sectional area around the outlet end of the exhaust pipe so as to define a suction throat at said outlet end.

3,857,459

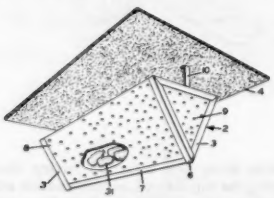
SOUND-ABSORBING WEDGE

George R. Adams, Lancaster, and William T. Meisenbach, Columbia, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Continuation-in-part of Ser. No. 302,653, Nov. 1, 1972, Pat. No. 3,819,010. This application Apr. 12, 1974, Ser. No. 460,387

Int. Cl. E04g *1/99*; G10k *11/04*

U.S. Cl. 181—33 GD 7 Claims



1. In a room which is subjected to a high decibel noise level and where there is a closed room structure with a ceiling therein, the improvement comprising the placing of sound-absorbing wedges suspended from the ceiling, said sound-absorbing wedges constituting a support means into which is placed a plurality of sound-absorbing boards to form a wedge-shaped structure which is triangular in cross section, said support means being composed of triangular-shaped end members and an interconnecting member connecting together one corner of each of the triangular end members, said corners of the triangular end members which are connected together by the interconnecting member being positioned facing downwardly toward the area below the ceiling, said sound-absorbing boards being triangular boards which fit within the triangular end members to form the ends of the wedge structure and rectangular sound-absorbing board structures which fit within the support means resting upon the interconnecting member and the sides of the end members, said support means and boards forming a wedge-shaped sound-absorbing structure which increases the sound-absorbing ability of the overlying ceiling system and a plurality of wedge structures are placed in an abutting relationship to form a continuous wedge structure which may extend from one side to an opposite side of the room.

3,857,460

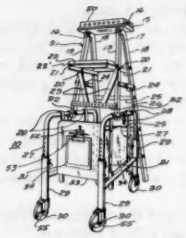
COMBINATION LADDER AND TOOL CART

Raymond B. Nini, 3329 3rd St., Berwick, La. 70380

Filed Apr. 10, 1974, Ser. No. 459,630

Int. Cl. E06c *5/24*

U.S. Cl. 182—17 10 Claims



1. A combined ladder and tool cart comprising:

a step ladder having one set of its lower legs substantially shorter than the other;

a collapsible dolly defining a generally open interior when in its erected disposition; said shorter legs of said ladder including ladder fastening means for fastening them to said collapsible dolly; and

a storage bin having a cross-section which at least generally conforms to said open interior of said dolly when erected and having bin fastening means for fastening it to said dolly within the interior thereof; said ladder, said dolly and said bin capable of being easily separated for compact storage when not in use.

3,857,461

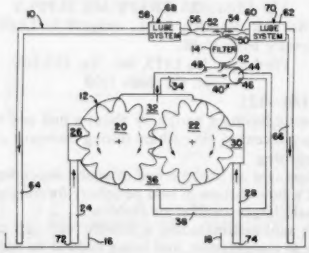
BIDIRECTIONAL PUMP SYSTEM HAVING PLURAL LUBRICATION CIRCUITS

James L. Schmitt, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 16, 1973, Ser. No. 351,479

Int. Cl. F04b *19/04*

U.S. Cl. 184—6.2 7 Claims



1. In a fluid system,

a bidirectional pump including a housing defining first and second chambers,

first and second horizontally spaced apart sumps at substantially the same vertical level,

means communicating said first sump with said first chamber and separate means communicating said second sump with said second chamber,

first and second separate lubricant systems intercommunicating with said first and second sumps, respectively,

check valve means comprising

a check valve,

a first discharge conduit communicating said first chamber with said check valve, and

a second discharge conduit communicating said second chamber with said check valve, said check valve means operable to direct fluid flow to said first and second lubricant systems in either flow direction of the bidirectional pump whereby fluid supply is maintained to said first and second fluid systems regardless of pump flow direction and tilting of said system which causes disproportionate flow distribution, means communicating said first and second lubricant systems with said first and second sumps, respectively, for returning fluid thereto, and,

flow control means intermediate said check valve means and said lubricant systems, for proportioning flow between said first and second lubricant systems.

3,857,462

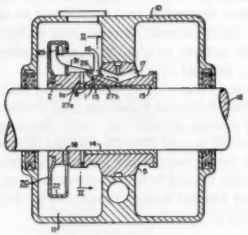
LUBRICATION FOR HEAVY DUTY THRUST BEARINGS

Howard N. Kaufman, and Albert A. Raimondi, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 24, 1973, Ser. No. 363,772

Int. Cl. F16n 7/16

U.S. Cl. 184—11 A **2 Claims**



1. A sleeve and thrust bearing configuration to journal a rotating shaft having a sleeve bearing surface and a thrust bearing surface, said thrust surface being arranged perpendicularly with respect to said sleeve bearing surface and said sleeve bearing having an upper and a lower half, a lubrication port extending through said upper sleeve bearing half for communication with said sleeve bearing surface and adapted to convey a supply of lubricant to said sleeve bearing surface and subsequently to said thrust bearing surface, a lubricant receiving slot circumferentially disposed in said upper half of said sleeve bearing, at least one lubricant feeding groove disposed in the thrust face of the upper half of said sleeve bearing, means to distribute a supply of lubricant to said sleeve bearing lubrication port and to said lubrication receiving slot, and passage means adapted to divert a portion of said lubricant supply from said circumferential lubricant receiving slot to said lubricant feeding groove, whereby the diverted lubricant portion can be fed downwardly through said at least one lubricant feeding groove and directly to said thrust bearing surface by means of gravity to thereby augment the lubrication of said thrust surface.

3,857,463

ARRANGEMENT FOR THE DOSING AND DISTRIBUTION OF FOOD

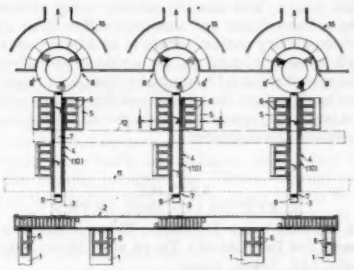
Gunter Wagenfuhrer; Bruno Hartmann, and Hans-Werner Rothmann, all of Gelsenkirchen, Germany, assignors to F. Kuppersbusch & Sohne AG, Gelsenkirchen, Germany

Filed Sept. 7, 1973, Ser. No. 395,258

Claims priority, application Germany, Aug. 12, 1972, 2239722; Aug. 12, 1972, 7229898

Int. Cl. E04h 3/04

U.S. Cl. 186—1 R **9 Claims**



1. An arrangement for the dosing and distribution of food forming part of a large-scale food preparing system which has at least one loading station where transportable containers are charged with food, at least one dosing station where food trays are charged with a predetermined portion of food taken from the food containers, and at least one food outlet station to which the filled food trays are introduced from the dosing station, comprising in combination:

a. a first conveyor means defining at least one accumulation path for the filled food containers and being disposed between said loading station and said dosing station;

b. a second distributor conveyor means situated adjacent said accumulation path for receiving said filled food containers therefrom;

c. a third conveyor means extending from said second conveyor means to said dosing station for receiving said filled food containers from said second conveyor means and carrying them to said dosing station;

d. a fourth conveyor means extending through said dosing station to said food outlet station for carrying food trays filled in said dosing station to said food outlet station;

e. a multi-zone movable means forming part of said food outlet station for receiving in each successive zone thereof, a filled food tray from said fourth conveyor means;

f. a mechanical accumulation system for said loaded food containers, arranged at said dosing station;

g. a tray feeding device arranged at said fourth conveyor means for introducing said filled food trays from said fourth conveyor means to said food outlet station; and

h. a synchronizing mechanism arranged at said fourth conveyor means and associated with said food outlet station.

3,857,464

ALKALI METAL ALUMINO SILICATES, METHODS FOR THEIR PRODUCTION AND COMPOSITIONS THEREOF

Lowell E. Hackbarth, Bel Air, Md., and Joseph T. Crockett, Auburn, Ala., assignors to J. M. Huber Corporation, Locust, N.J.

Division of Ser. No. 112,469, Feb. 3, 1971, , which is a continuation-in-part of Ser. No. 730,892, May 21, 1968, Pat. No. 3,582,379. This application July 20, 1972, Ser. No. 273,675

Int. Cl. C08h *17/02*

U.S. Cl. 106—288 B 1 Claim

1. In a composition of matter comprising finely divided precipitated pigments composed of the oxides of sodium, aluminum and silicon produced by reacting sodium silicate and aluminum sulfate in an aqueous medium, the improvement comprising finely divided precipitated sodium alumino silicates consisting essentially of the oxides of sodium aluminum and silicon, said alumino silicates being produced by reacting sodium silicate and aluminum sulfate in an aqueous medium containing sodium sulfate in an amount equal to at least 1% by weight based on the weight of the silicate and wherein at least about 0.1% of which sulfate is provided in said aqueous medium from the inception of the reaction to thereby form an improved pigment having increased surface areas and oil absorption characteristics.

3,857,465

ELEVATOR CONTROL DEVICE

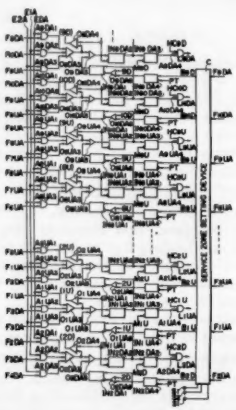
Tatsuo Iwasaka; Takeo Yuminaka; Hideto Matsuzawa, all of Katsuta, and Taiji Ishizuka, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 18, 1973, Ser. No. 352,480

Claims priority, application Japan, Apr. 19, 1972, 47-38630; May 19, 1972, 47-49073; May 26, 1972, 47-51718

Int. Cl. B66b *1/18*

U.S. Cl. 187—29 R 25 Claims



1. An elevator control device for an elevator system having a multiplicity of elevator cars serving a multiplicity of floors, said control device comprising means for determining the service zone of each car at each moment, the car being able to respond only to a hall call from floors within the zone, means for transmitting a hall call generated from a floor to a car whose service zone includes said floor, means for setting the maximum size of the service zone of each car, and means for limiting the forward extent of said service zone in response to the operation of said means for setting the maximum size of service zone.

3,857,466

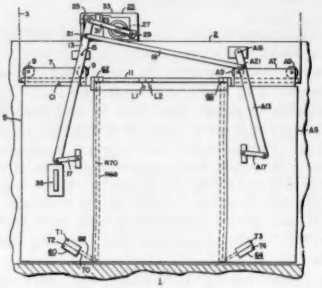
CLOSURE SYSTEM

Harry Berkovitz, Glenrock, and Lawrence Tosato, Millburn, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 18, 1973, Ser. No. 426,261

Int. Cl. B66b *13/26*; E05f *15/20*

U.S. Cl. 187—52 16 Claims



1. A closure system, comprising:

an entranceway,

a sill associated with said entranceway, at least a portion of said sill having a non-specular surface,

a door for said entranceway,

means mounting said door for movement to open and close said entranceway,

an object detecting means including transmitter means providing at least one beam of radiant energy, and detector means responsive to such energy,

said transmitter means being mounted on said door for movement therewith and positioned to direct a beam of radiant energy at said non-specular surface of the sill, said beam of radiant energy forming a predetermined angle with the normal of said sill,

said detector means being mounted on said door for movement therewith and positioned to intersect said beam of radiant energy at said sill, with the angle of reflection from the sill to said detector means relative to the normal thereof, being other than said predetermined angle,

said detector means being responsive to an interruption of reflected radiant energy from said sill for controlling the operation of said door.

3,857,467

RELAY CLUTCH TIMER

Harold D. Hulterstrum, Baraboo, Wis., assignor to Gulf & Western Industries, Inc., New York, N.Y.

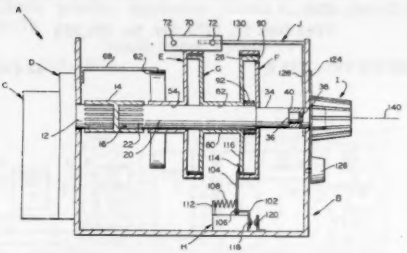
Filed June 1, 1973, Ser. No. 365,848

Int. Cl. F16d *43/26*

U.S. Cl. 192—33 R 14 Claims

1. A relay clutch timer having a clutch means for driving a cam means, said clutch means including: a pair of opposite, axially spaced clutch elements and a central clutch element positioned between said opposite clutch elements; said central clutch element being movable axially between said opposite clutch elements and including a structural element on one axial end and a clutch member on the opposite axial end; each of said opposite clutch elements having connecting means for drivingly receiving said structural element of said central clutch element, said connecting means allowing axial movement of said central clutch element while maintaining said driving connection with said structural element; each of said opposite clutch elements having a clutch member adapted to drivingly engage said clutch member of said central clutch element; means for mounting said central clutch element with

said clutch member adjacent one of said opposite clutch elements and said structural element receiving by said connecting means of the other clutch element; and, relay means for moving said central clutch element between a first position



with said clutch member of said central clutch element engaged with said clutch member of said one opposite clutch element and a second position with said clutch member of said central clutch element disengaged from said clutch member of said one opposite clutch element.

3,857,468

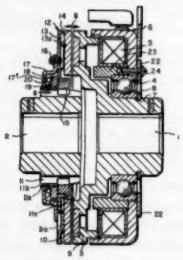
SELF-ADJUSTING CLUTCH OR BRAKE

Yoshihisa Iritono, and Mitsuo Sakurai, both of Kiryu, Japan, assignors to Ogura Clutch Co., Ltd., Kiryu City, Gunma Prefecture, Japan

Filed Apr. 5, 1973, Ser. No. 348,151

Int. Cl. F16d *13/75, 27/10*

U.S. Cl. 192—84 C **7 Claims**



1. An electromagnetic device comprising a friction disc mounted on a drive shaft, a driven member mounted on a driven shaft to be slidable in the axial direction, said driven member confronting said friction disc with a definite gap therebetween in an inoperated condition, an electromagnet to attract said driven member into engagement with said friction member, characterized in that there are provided an annular spring seat secured to the side of said driven member opposite said friction disc, the radially inner end of said spring seat being bent to define an annular space between said driven member, said driven shaft and said spring seat, a slide ring contained in said annular space, said slide ring being provided with a friction member adapted to frictionally engage said driven shaft, and a spring interposed between said spring seat and said slide ring, whereby when said driven member is brought into frictional engagement with said friction disc, said slide ring is moved toward said friction disc by said spring seat.

3,857,469

IMPROVEMENTS IN COMPOSITE ARTICLES

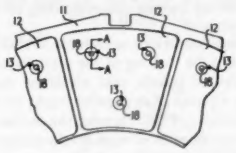
Ian Leonard Stimson, Rugby, England, assignor to Dunlop Limited, London, England

Filed Oct. 30, 1972, Ser. No. 301,818

Claims priority, application Great Britain, Nov. 4, 1971, 51277/71

Int. Cl. F16d *69/00*

U.S. Cl. 192—107 M **18 Claims**



1. A friction member for a brake or clutch comprising a friction element having at least one aperture through the element and spaced from the peripheral edges thereof, and a metal backing member, the aperture having an enlarged end remote from the backing member, the material of the friction element being more brittle and of higher specific heat than that of the backing member, the friction element being clamped to the backing member by a spigot located in said aperture with its axis normal to the plane of the friction element and a fastening device extending from one end of the spigot through the backing member, the other end of the spigot being enlarged and co-operating with the enlarged end of the aperture to prevent displacement of the friction element away from the backing member, the spigot being reinforced by filamentary carbon and being of a material compatible with that of the friction element.

3,857,470

PRINTER FOR ALPHANUMERIC CHARACTERS

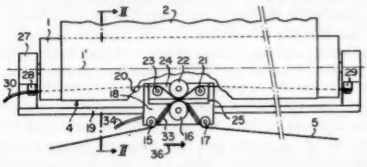
Gilbert Bastard, Onex, Geneva, and Michel Moulin, Lausanne, both of Switzerland, assignors to Battelle Memorial Institute, Carouge/Geneve, Switzerland

Filed May 3, 1973, Ser. No. 356,943

Claims priority, application Switzerland, May 31, 1972, 8011/72

Int. Cl. B41j *3/44*

U.S. Cl. 197—1 R **8 Claims**



1. A printer for the sequential printing of a series of alphanumeric characters forming a printing line, each of such characters being reproduced in the form of an assembly of dotted marks arranged in accordance with a fixed outline formed by the nodes of an orthogonal grid, the printer being composed of

a printing support

an ink support covered with a layer of thermofusible and electrically conducting ink;

a tightening and separating device actuatable in such a manner as to apply the ink support against the printing support and separate the two supports from each other; a first displacement means actuatable in such a manner as to move the tightening and separating device along the printing line;

a second displacement means actuatable in such a manner as to move the printing support at right angles to the printing line;

a selection device actuatable in such a manner as to select the points of the outline corresponding to the character to be printed; and

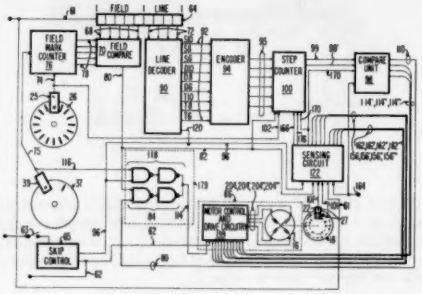
an electrical melting device actuatable in such a manner as to bring about the melting of the sections of ink situated in such selected points, said electrical melting device comprising a group of m parallel tracks of electrodes, m being the number of dots forming the outline in the direction of its length, each of such tracks comprising pairs of pointed electrodes, each of which is immersed in a portion of the layer of ink and defines the boundaries of such portion of ink, the pairs of electrodes of each group of tracks being aligned in accordance with transverse lines perpendicular to such tracks; a group of $(m+1)$ parallel contact tracks, each of such tracks comprising a set of pointed contacts arranged in an uninked part of the ink support and parallel to the electrode tracks, the contacts of such group of tracks being aligned in accordance with lines perpendicular to such tracks, one electrode of each pair of electrodes of the same row being connected to the same contact of a corresponding transverse row of contacts, the other electrodes of each of the pairs of electrodes of this transverse row being connected one by one to the other contact of the corresponding row in such a way that the electrode tracks correspond one by one to the contact tracks, the additional contact track being common to all the electrode tracks; and $(m+1)$ contact lines arranged on a lengthwise support in such a manner that each line faces a contact track, the contact lines being connected to the selection device; said melting device further comprising means for the application of the support for the contact lines against the ink support in such a way that the $(m+1)$ contact lines are simultaneously in contact, one by one, with the contact lines on the corresponding track on the same transverse row; said tightening separating device including at least one pressure roller encircled by the ink support in such a way that the ink support forms a loop projecting towards the printing support, the axis of the roller being at right angles to the printing line in such a manner that the ink support touches the printing support while following a generatrix of the roller; said first displacement means being actuatable in such a way that when the tightening and separating device is shifted in the direction of the printing, the roller is made to turn on the ink support and when the tightening and separating device is shifted in the opposite direction, it keeps the roller apart from the printing support, keeps the contact support apart from the ink support, and entrains the ink support in a travel movement that replaces the used section of the ink layer with a virgin section of the same; and the selection device includes a synchronization track formed of a set of reference groups kinematically integral with the ink support, each group being comprised of n references, where n is the number of dots in the outline in the direction of its length, a detection device actuable in such a manner as to deliver electrical signals on the passage of these marks, the detection device being kinematically integral with the tightening and separating device in its lengthwise motion, and a generator of electrical pulses actuatable in such a way as to deliver to the contact lines which correspond to the points chosen by the selection device electrical pulses carrying enough current to bring about the melting of the section of ink, such generator being operated by the signals generated by the selection device.

3,857,471

TAPELESS PAPER MOTION CONTROL SYSTEM PROVIDING SENSING CIRCUITS TO GOVERN MOTOR INCREMENTING

Paul R. Hoffman, Farmington, and Roger S. Naeyaert, Warren, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 12, 1973, Ser. No. 396,353
Int. Cl. B41j *15/04*
U.S. Cl. 197—133 R **42 Claims**



1. A tapeless format control apparatus for use in a line printer for printing on web paper, said printer having web paper handling and positioning means associated with a printing position thereof, said apparatus comprising:

a. a stepping motor for operatively advancing said web paper relative to said printing position, said motor being coupled to said web paper handling and positioning means,

b. motor control means associated with said stepping motor and effective for stopping and detenting said stepping motor,

c. means for selectively determining the length of the web paper upon which lines of information are to be printed, such selected web paper length constituting a selected form length,

d. means for receiving and storing externally originated print spacing instructions,

e. a plurality of pulse generating means effective for identifying each increment of rotational motion of said stepping motor according to a gray coded scheme, each increment of advancement of said web paper, and the passage of each unit of selected form length, and

f. means cooperating with said motor control means and responsive to said print spacing instructions for controllably coordinating said plurality of identifying pulses such that each line of information printed on said selected form length is properly spaced from the preceding line and all of the lines of printed information conform to a preselected format represented by said externally originated print spacing instructions wherein said controllably coordinating means includes:

sensing means responsive to said pulse generating means effective for identifying each increment of rotational motion of said stepping motor and cooperating with said motor control means for allowing said stepping motor to increment only upon ascertaining that its preceding increment was properly executed, and

first comparator means responsive to said print spacing instructions and interacting with said motor control means for controllably retarding the speed of said stepping motor as a print line on said web paper corresponding to said print spacing instructions approaches said printing position.

3,857,472

CONVEYOR FOR ADVANCING AND ORIENTING EGGS AND TRANSFERRING THE EGGS TO GRIPPER UNITS OF AN EGG BREAKING MACHINE

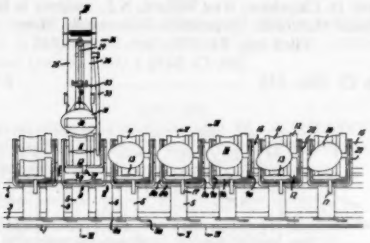
Jan Tavsen Klint, No. 33 Havnegade, 5100 Odense, Denmark

Filed Mar. 23, 1973, Ser. No. 344,396

Claims priority, application Denmark, Apr. 5, 1972, 1627/72

Int. Cl. B65g *47/00, 47/24*

U.S. Cl. 198—20 R 10 Claims



1. A conveyor for advancing and orienting eggs and transferring the eggs to gripper units of an egg breaking machine, said conveyor comprising

an endless flexible carrier element, such as a chain,

drive means for moving said carrier element in an endless path including an egg transfer station,

a plurality of pairs of spool shaped egg supporting rollers,

means rotatably mounting said pairs of rollers on said carrier element so that each roller has its axis of rotation parallel with the direction of travel of the conveyor, and the two rollers of each pair are mounted side by side to form in cooperation an egg receiving and supporting seat,

drive means for synchronously driving both rollers of each roller pair in the same direction including a drive roller and stationary means for rotatably supporting said drive roller with its axis parallel to a rectilinear portion of said conveyor upstream of said egg transfer station,

and transfer means in the region of said transfer station for imparting to the eggs a movement transversely of the direction of travel of the conveyor and without changing the orientation of the eggs, whereby the eggs are transferred from said supporting rollers to said gripper units.

3,857,473

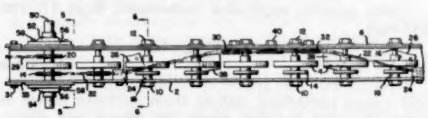
POWERED RAIL CONVEYOR

Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Filed June 5, 1972, Ser. No. 259,601

Int. Cl. B65g *13/07*

U.S. Cl. 198—127 R 10 Claims



1. A power rail comprising an elongated channel of U shape cross section, a series of rollers rotatably mounted in the channel with the peripheries of the rollers extending above the arms of the U, a sprocket secured to each roller, and an endless chain engaged along one run with the sprockets for simultaneously rotating all the rollers, and means for adjusting the slack in the chain, said means for adjusting comprising means for shifting and guiding at least a portion of the return run of the chain in a plane laterally displaced from and parallel to the plane containing the sprockets, and means for urging a segment of the displaced portion of the chain in said laterally displaced plane to tighten the chain.

3,857,474

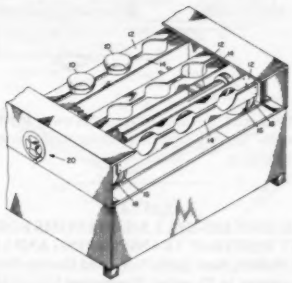
ADJUSTABLE CONTAINER CONVEYOR FOR FILLING MACHINE

George Ernest Hutson, Minneapolis, Minn., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 25, 1973, Ser. No. 400,470

Int. Cl. B65g *15/24*

U.S. Cl. 198—131 6 Claims



1. An adjustable container conveyor comprising:

a first conveyor having a plurality of first container supports:

a second conveyor having a coincident center of rotation with said first conveyor and having a plurality of second container supports, said first and second container supports defining an opening therebetween for holding containers;

first and second helical gears, said gears being of opposite hand, said first helical gear operatively connected to said first conveyor and said second gear operatively connected to said second conveyor; and

third and fourth rigidly interconnected helical gears, said gears being of opposite hand, said third helical gear intermeshing with said first helical gear and said fourth helical gear intermeshing with said second helical gear, said third and fourth helical gears being transversely movable with respect to said first and second helical gears and said third and fourth helical gears adapted to be rotationally driven to drive said conveyors, said transverse movement of said third and fourth helical gears rotating said first and second helical gears in opposite directions thereby adjusting the opening between said first and second container supports.

3,857,475

FEEDING APPARATUS FOR ELONGATED MASSES OF MATERIAL

Robert Lewis Smith, Hinsdale, Ill., assignor to Chemetron Corporation, Chicago, Ill.

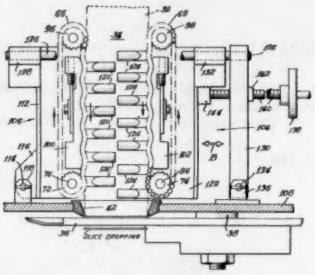
Filed Sept. 28, 1972, Ser. No. 293,166

Int. Cl. B65g *15/00*

U.S. Cl. 198—137 2 Claims

1. Apparatus for feeding an elongated mass of substantially uniform transverse dimension longitudinally along a feed path intersecting the cutting path of a rotary knife, said apparatus comprising a pair of spaced apart endless belts having driving runs disposed on opposite sides of said feed path for driving engagement with said mass, a pair of undulated surfaces positioned to hold said driving runs in driving engagement with a mass being fed along said feed path, a pair of lateral guides for said mass normal to said undulated surfaces, one of said lateral guides comprises a plurality of intermeshing fingers spaced

apart and transverse to the longitudinal axis of said loaf, said fingers supported relative to said undulated guide surfaces



with alternate ones movable toward and away from the others, and means for moving said belts along said driving runs in a common direction.

3,857,476

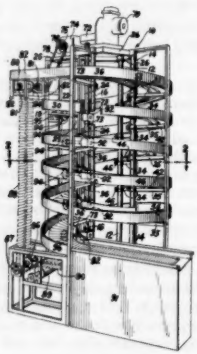
HELICAL ENDLESS-BELT MECHANISMS FOR FUEL OR EMPTY DISHTRAY TRANSPORTING AND LIFTING

Sidney T. Heifetz, New York, N.Y., and George Ran, Fort Lee, N.J., assignors to Theodore Equipment Corporation, Wood-Ridge, N.J.

Filed Jan. 29, 1973, Ser. No. 327,417

Int. Cl. B65g *17/06*

U.S. Cl. 198—136 **9 Claims**



1. In a multi-convoluted helical conveyor of the character described for transporting substantially flat-bottomed full or empty dishtrays, the combination of a supporting structure, a pair of helically-parallel track bars supported by said structure, a plurality of chain-driving sprockets, and an endless, slatted, link-chain belt comprised of a bowable and twistable link-chain, a plurality of separate, independent, free-ended, semi-flexible plastic slats, the free and deflectable ends of said slats extending transversely over and substantially beyond the track bars, said track bars disposed at an inclined angle not over the friction angle of the dishtrays upon the slats, said slats having integral, bifurcated chain-engaging and track bar engaging means at their mid-lengths to fixedly engage said chain and to slidably engage said track bars flanking said bifurcated means, said bifurcated means having outwardly directed and opposed recesses to snugly yet slidably fit said track bars, said recesses being in close sliding relationship with the upper, nether and inner surfaces of said track bars to prevent uplift, tilting and lateral shifting of the slats, said recesses being of maximum length as to minimize the orientative wandering of the slats during their travel under the influence of said sprockets, whereby loadless slats are confined to move sequentially in a twisted, ribbon-like non-planal mode and whereby the ends of deflected slats move in groups in supportive planal contact with transported dishtrays, such supportive slats being selectively independently flexed according to the weight disposition of any particular dishtray.

3,857,477

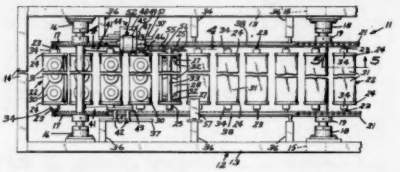
TRAY TURNOVER DEVICE

Frank D. Chipchase, West Milford, N.J., assignor to International Multifoods Corporation, Minneapolis, Minn.

Filed Aug. 24, 1972, Ser. No. 283,532

Int. Cl. B65g *17/00*

U.S. Cl. 198—155 **5 Claims**



1. In bakery apparatus including means for advancing a tray of bakery products, invertible about a first axis thereof, in a direction orthogonal to the first axis to a location where the products are unloaded by inverting the tray, the improvement which comprises:

a. a disc rotatable about a second axis parallel to said first axis;

b. variable speed drive means independent of the tray advancing means for causing rotation of said disc at any speed within a predetermined range;

c. resilient means mounting said drive means for limited independent motion of said second axis transverse to itself and to the direction of movement of said tray;

d. and a wheel member carried by said tray concentrically with the axis of inversion thereof, and positioned so that the advance of said tray brings said member into a position of tangential contact with said disc, so that further advance of the tray causes said independent motion while said disc and said member remain in contact for a period determined by the rate of movement of the tray.

3,857,478

SYSTEM OF AND A METHOD FOR TRANSPORTING HEAVY OR BULKY ARTICLES

Pieter Meeusen, Barendrecht, Netherlands, assignor to H. Nielsen & Son Maskin-Fabrik A/S, Copenhagen, Denmark

Continuation of Ser. No. 72,974, Sept. 17, 1970, abandoned. This application Feb. 1, 1973, Ser. No. 328,720

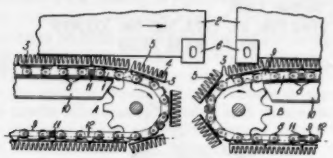
Claims priority, application Netherlands, Sept. 17, 1969, 6914089

Int. Cl. B65g *15/30*

U.S. Cl. 198—195 **3 Claims**

1. An endless chain system for transporting bulk containers, said system comprising endless chain conveyor means and sprocket means therefor; means for driving said sprocket means; load-supporting members connected in said chain conveyor means to permit them to be carried round with said conveyor means and to pivot in relation to one another in passing round said sprocket means, said chain conveyor means and said load-supporting members forming a transporting unit, rollers rotatably supported by said unit and, transportable therewith, and, rails upon which said rollers run during transportation; said load-supporting members being directly supported at each side thereof by said rollers on said

rails and having resilient load-supporting toothed pads, each pad having a plurality of teeth which project upwardly with



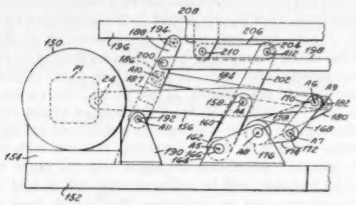
respect to said rails and which are deflectable in a direction parallel to said rails and yield elastically to the container supported thereby.

3,857,479

PRIME MOVER MECHANISM AND TRANSFER SYSTEM

John Henry Brems, 32867 White Oaks Tr., Birmingham, Mich.

Filed June 26, 1972, Ser. No. 266,335
Int. Cl. B65g *25/04*
U.S. Cl. 198—219 **9 Claims**



1. In a transfer system in which a series of workpieces is transferred from one work station to another through a sequential motion pattern along a transfer path which consists of a first motion in which the workpiece is moved a distance in a direction substantially transverse to the transfer path, a second motion in which the workpiece is advanced in a direction parallel to the transfer path to the next station, a third motion in which the workpiece is lowered in a direction substantially opposite to the direction of the first motion, and a fourth motion in which the transfer system returns along the transfer path to its original starting position during which the workpieces are not returned, a mechanical driving means comprising:

a. a frame structure,

b. a motion generating means on said frame structure having an output member movable around a substantially square path comprising four substantially equal isolated strokes, two primary strokes parallel to each other, and two secondary strokes parallel to each other and substantially perpendicular to said primary strokes,

c. a transfer means operatively associated with said output member to be driven thereby to transfer workpieces from one work station to the next in a lift and carry and lower motion which comprises a transfer means extending along a transfer path, first means supporting said transfer means for motion transverse of the length of said transfer path and in the direction of the length of said path, and second means connecting said first supporting means with said output member to effect lifting and lowering of said bar means in two of the parallel strokes of the output path of said output member and advance and retraction of said bar means in the other two parallel strokes, and

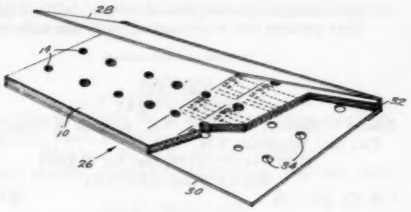
d. said first means supporting said bar means comprising a first link supported at one end by said second means on said output member, third means movably mounting the other end of said link, and fourth means connecting said link and said transfer bar means, said third means comprising a lever pivotally associated with said frame and to said link, and said fourth means comprising a pair of levers pivoted on said frame, one to contact said bar means in a raise and lower motion, and one associated with said bar means to shift it in the transfer path.

3,857,480

CONTACT LENS FILING AND RECLASSIFYING CARD

Francis H. McClernon, P.O. Box 1601, Springfield, Mo. 65805

Filed July 31, 1973, Ser. No. 384,394
Int. Cl. A45c *11/04*
U.S. Cl. 206—5.1 **6 Claims**



1. An article for use in reclassifying contact lenses comprising:

a rectangular card containing at separate locations thereon a plurality of regularly arranged sets of the same indicia for recording at each set in writing several specifications of a concavo-convex contact lens; and

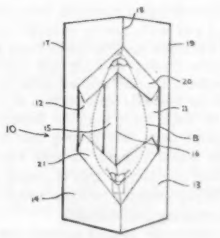
a circular aperture in said card adjacent each said indicia set, said aperture being of a diameter slightly smaller than that of a contact lens, whereby a lens being reclassified and to have its specifications recorded on said card at one of said indicia sets may be positioned, convex side down, in the aperture adjacent said one set to inhibit displacement of the lens while supported on said card.

3,857,481

DISPLAY CONTAINER

Irving Morton Koltz, 28 Livingston Rd., No. 50, Toronto, Ontario, Canada

Filed Mar. 19, 1973, Ser. No. 342,443
Int. Cl. B65d *5/50, 85/42*
U.S. Cl. 206—45.14 **6 Claims**



1. A package for packaging articles having upper and lower ends which are of reduced dimension in relation to intermediate portions of the article, said package comprising;

a tubular member of generally rectangular cross section, and having width and breadth dimensions greater than the cross section or dimension of said intermediate portion of said article, and defining four generally planar side walls;

upper and lower suspension flap means formed by symmetrical portions of a pair of adjacent said side walls, each of said suspension flap means being divided symmetrically in two by a single fold line;

generally V-shaped fold lines joining each of said suspension flap means to its respective pair of side walls, said flap means being dimensioned and arranged whereby, when the same are infolded into said tubular member, portions thereof extend across the interior of said container, and contact the other pair of said side walls, thereby to maintain said tubular member in its rectangular configuration,

and,

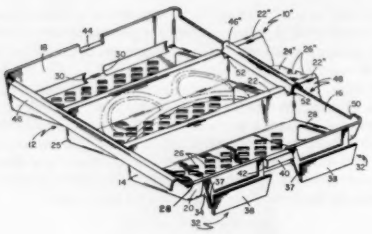
article retaining openings formed in said suspension flap means, and adapted and dimensioned to receive respective upper and lower ends of said article, and to support said article within said tubular member, with its intermediate portions free of contact with said side walls thereof.

3,857,482

DISPLAY TRAY

Robert N. Shelton, Windham, N.H., assignor to Foster Grant Co., Inc., Windham, N.H.

Filed Nov. 12, 1973, Ser. No. 415,071
Int. Cl. B65d *21/02, 1/34*
U.S. Cl. 206—72 **8 Claims**



1. A display tray comprising:

a bottom,

a pair of upstanding side walls extending upwardly from said bottom,

a pair of end walls extending upwardly from said bottom;

a first one of said end walls having at least one opening in the vicinity of a bottom portion thereof and a second one of said end walls having at least one joining member extending outwardly thereof and adapted to co-act with the opening in the first end wall portion of a similar tray whereby two of such trays may be joined together in end-to-end relationship, said joining member having a guiding portion which extends through said opening in said first end wall of a similar tray in joined position and an upwardly facing gripping portion which engages the wall portion bordering said opening;

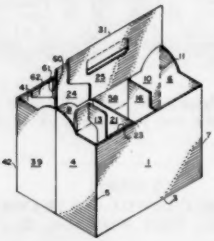
a lug extending outwardly of said second one of said end walls, said lug being positioned above said joining member and having a downwardly facing clamping surface opposing said gripping portion for engagement with a portion of the first end wall of a similar tray for joining purposes, said clamping surface of said lug being spaced apart a predetermined distance from the gripping portion of said joining member so that there is a substantially tight friction fit of the end wall portion between said clamping surface and said gripping portion of said joining member when two of such trays are joined together.

3,857,483

ARTICLE CARRIER

Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Feb. 26, 1973, Ser. No. 335,495
Int. Cl. B65d *75/00*
U.S. Cl. 206—187 **4 Claims**



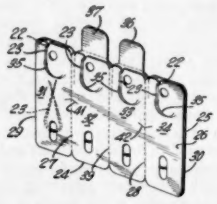
1. A collapsible article carrier formed from a unitary blank comprising a bottom wall, opposed side walls joined to said bottom wall along opposite side edges thereof, end wall panels joined to the ends of said side walls and extending transversely inward therefrom, riser panels joined to the inwardly extending edges of said end wall panels and extending medially inward of the carrier, a multiple-ply handle secured at its ends to said riser panels, a first transverse partition panel joined to at least one of said riser panels at one end of the carrier, a transverse partition tab struck from the portion of the blank between the top of one side wall and the handle and having its inner portion secured in face contacting relation with said transverse partition panel and arranged with its outer end adjacent said one side wall to define an end cell at said one end of the carrier, and an anchoring flap struck from the portion of the blank between the top of said one side wall and the handle and secured to the inner surface of said one side wall and foldably joined to the top edge of said one side wall intermediate said partition tab and said one end of the carrier, said anchoring flap being joined to the outer end of said transverse partition tab.

3,857,484

SUTURE PACKAGE

Eberhard Heinrich Thyen, Middlesex, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Jan. 26, 1973, Ser. No. 326,634
Int. Cl. A61l *17/02;* **B65d** *75/04*
U.S. Cl. 206—227 **4 Claims**



1. A multi-strand suture package comprising a card of relatively stiff material rectangular in shape having first and second flaps extending from one end thereof and folded along its center line to form overlying panels having a bottom edge along said fold, a top edge with said flaps extending therefrom, and two side edges; said panels being folded inwardly along fold lines parallel to said side edges to form first and second adjacent compartments and third and fourth adjacent com-

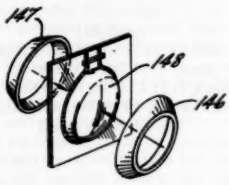
partments that are open at the top edge; each compartment containing a double-armed suture wound in the form of a coil comprising a multiplicity of figure-eight convolutions each of which comprise a centrally located suture crossing and opposed loops on each side of said crossing and integral with the suture portions forming the crossing, the suture crossing of successive figure-eight convolutions being superimposed one upon the other to dispose the convolutions in successive layers; a needle affixed to each end of each suture and extending from the open end of each compartment toward the bottom edge; said first flap being folded over the first and second compartments, and said second flap being folded over the third and fourth compartments, thereby closing the open end and retaining the needles in position between adjacent compartments; said first and second compartments being folded inwardly toward the third and fourth compartments to bring the first and second flaps together; and means for retaining the first and second flaps and adjacent compartments together in the folded position to form a suture package; whereby as the package is unfolded, said needles are exposed sequentially facilitating removal by the surgeon of each suture from its compartment one at a time without tangling or kinking.

3,857,485

FLEXIBLE CONTAINERS FOR LIQUID SAMPLE SPECTROMETRY AND METHODS AND APPARATUS FOR FORMING, FILLING AND HANDLING THE SAME

Edmund Frank, Chicago, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed June 5, 1972, Ser. No. 259,767
Int. Cl. B65d *65/16*; **G21f** *5/00*
U.S. Cl. 206—305 **4 Claims**



1. In a sample container for liquid scintillation spectrometry analysis including at least a pair of layers of flexible, light-transmissive, polyester film,

means defining a joint between said layers to form an enclosed bag portion for holding said liquid sample,

means for filling said bag portion,

the filling means being sealable when the bag portion is filled with sample to form the liquid tight seal with said sample within the container bag portion, the improvement comprising,

annular light reflective means disposed about the periphery of said bag portion and the central portion of said bag remaining light-transmissive.

3,857,486

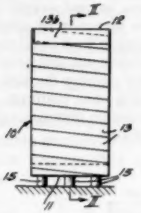
WEB MATERIAL ROLL WITH END PROTECTORS AND METHOD FOR MAKING SAME

Gregory Klebanoff, Jr., Loves Park, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 26, 1972, Ser. No. 318,499
Int. Cl. B65d *19/04*, *19/40*, *85/66*, *85/67*
U.S. Cl. 206—386 **17 Claims**

1. A protectively wrapped roll of web material, comprising an end protector on one end of the roll;

a continuous strip of protective material wrapped retainingly in a straight circular starting lap about the end protector at one end of the roll and then continuing spirally wrapped throughout the length of the roll; and



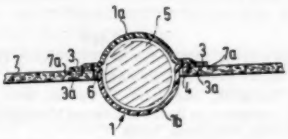
a final lap of the protective strip material secured about the opposite end of the roll.

3,857,487

BLISTER PACKAGE

Raphael Charles Misslin, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 29, 1972, Ser. No. 319,708
Claims priority, application Switzerland, Dec. 30, 1971, 19176/71
Int. Cl. B65d *73/00*
U.S. Cl. 206—463 **3 Claims**



1. A blister package comprising:

a double blister serving to enclose an article and consisting of two halves each with a securing flange and foldable along a common folding edge;

a display card provided with an opening into which the double blister fits;

the securing flange of one half of the blister being wider than that of the other half;

both of said securing flanges of the closed double blister containing therein an article resting on one and the same surface of said display card and in the vicinity of said opening therein;

the narrower of said flanges being located directly against said surface of said display card;

the wider of said flanges having an inner portion non-fixedly and loosely covering said narrower flange;

said wider flange having an outer portion directly resting on said surface of said display card; and

said outer portion of said wider flange being fixed to said surface in a manner enabling said outer portion to be pulled off to thus effect the easy removal of the double blister from said display card.

3,857,488

DYNAMIC WEIGHING APPARATUS

Roger Le Cren, 4, Avenue Odette, Nogent Sur Marne, France (94130)

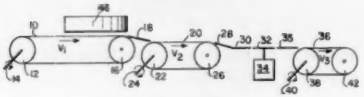
Filed Sept. 6, 1973, Ser. No. 394,662
Claims priority, application France, Sept. 7, 1972, 72.31713
Int. Cl. B07c *5/16*
U.S. Cl. 209—73 **17 Claims**

1. Dynamic weighing apparatus for articles of comparable weight and bulk, comprising

weight transducer means having a pass-band adapted to the desired rate of measurement and a range of measurement adapted to the weight of the said articles,

a weighing platform, in said weight transducer means, the dimension in the direction of advance of the articles of said platform being at least equal to the maximum dimension of the articles in the said direction,

handling means for causing the said articles to advance in translation on the said platform, separated from one another by a minimum distance, equal to the said dimension of the platform,



integration means for integrating the signal derived linearly from the signal supplied by the said transducer means during the entire duration of the passage of the article on the said platform,

means for generating a transit-time correction signal inversely proportional to the mean speed of the crossing of the platform by the said article, and

means for dividing the integrated signal by the said correction signal for generating an elaborated measuring signal representing the static weight of the article.

3,857,489

STABILIZATION OF SUSPENSIONS USED IN HEAVY-MEDIA SEPARATION PROCESSES

Laszlo Valentyik, and John T. Patton, both of Houghton, Mich., assignors to Board of Control Michigan Technological University, Houghton, Mich.

Continuation-in-part of Ser. No. 225,609, Feb. 11, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,381

Int. Cl. B03b *3/40*

U.S. Cl. 209—172.5 **3 Claims**

1. In a heavy-media separation process for separating materials of a particulate feed wherein the feed is charged into a heavy-media suspension which is maintained at a specific gravity intermediate between the specific gravities of the components of the feed so that the components are separated into a float and a sink product, the improvement comprising, adding to the suspension about 0.01 to about 1 weight percent, based on the total weight of the water of the suspension, of a water-soluble heteropolysaccharide produced by the action of bacteria of the genus Xanthomonas on a carbohydrate so as to produce a stability in excess of about 50 percent and a plastic viscosity less than about 55 centipoises.

3,857,490

METHOD OF PNEUMATICALLY CONVEYING COAL AND APPARATUS THEREFOR

John L. Wilcox, Nimitz, W. Va. 25978

Filed Jan. 15, 1973, Ser. No. 323,700

Int. Cl. B01d *46/12*

U.S. Cl. 209—250 **2 Claims**

1. A pneumatic coal conveying system comprising: a plurality of spaced housings disposable within a mine shaft and interconnected so as to extend from a position adjacent the face of the shaft from which coal is being removed to a remote location;

each of said housings having:

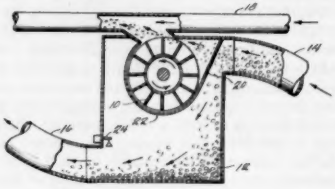
a. an input duct opening into a front portion of said housing,

b. an output duct opening into a rear portion of said housing,

c. an exhaust duct also opening into a rear portion of said housing,

d. impeller means disposed within said housing between said input duct and said exhaust duct, and

e. screen means disposed between said impeller means and said input duct for separating finer particles of coal from coarser particles of coal wherein said screen means is disposed so as to permit only said finer particles of coal to pass through said impeller means and into said exhaust duct and said coarser particles of material are permitted to fall into the lower portion of said housing where they are subsequently removed from;



each said output duct is connected to said input duct of the immediately succeeding housing, and each said exhaust duct is connected to each subsequent exhaust duct;

each said impeller means (1) causing a first airflow between said input duct and said exhaust duct in said housing in which it is mounted for maintaining an airflow sufficient to transport smaller particles of coal from said input duct to said exhaust duct and into each subsequent exhaust duct, and (2) causing an airflow from each preceeding output duct to each subsequent input duct sufficient to transport said larger particles of coal from each said housing into each subsequent housing.

3,857,491

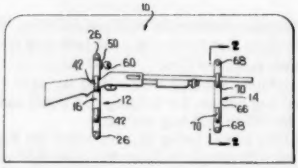
VEHICLE MOUNTED GUN RACK

Henry M. Townsend, 1257 8th P.O.Box 43, Coos Bay, and James E. Gillilan, 2121 17th St., North Bend, both of Oreg.

Filed Feb. 14, 1973, Ser. No. 332,481

Int. Cl. A47b *81/00*

U.S. Cl. 211—8 **1 Claim**



1. A gun rack comprising a pair of rack sections, one of said rack sections comprising a housing having a front and side walls mounted on a backing strip, the other of said rack sections having at least one loop member for receiving the barrel portion of a gun, a plurality of slots formed in the front wall of said housing, opposed flanges extending from the said side walls and spaced from said front wall, a slidable member disposed in the area defined by said flanges and said front wall, a plurality of openings formed in said slidable member, said openings terminating in an opening of reduced area, a C-shaped clamp member having a pair of opposed notches formed at each end thereof, a key operated lock, a link connecting said lock and said slidable member, said C-shaped clamp member encircling the stock portion of said gun, the said openings in said slidable member and the said slots in the front wall of said housing being aligned, each said pair of opposed notches on said C-shaped clamp member engaging

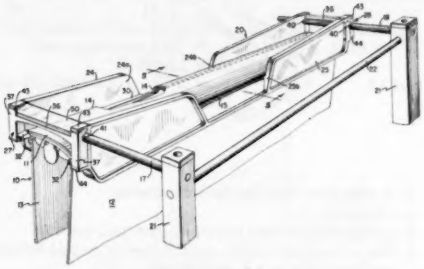
with the said reduced area of the openings formed in said slidable member when said slidable member is moved by actuation of said key lock from a lowermost locking position to an uppermost releasing position whereupon said C-shaped clamp member and gun stock supported thereby can be removed from said gun rack.

3,857,492

LOOSE LEAF BINDER STORAGE SYSTEM

Jack Michaelis, Elmhurst, and Frank J. Malcik, Berwyn, both of Ill., assignors to Swingline Inc., Long Island City, N.Y.

Filed Mar. 15, 1973, Ser. No. 334,962
Int. Cl. A47b *63/00*; B42d *17/00*
U.S. Cl. 211—42 **10 Claims**



1. Loose leaf binder suspension system for storing side-by-side and back-side-up a plurality of binders having laterally projecting flanges extending longitudinally along both side edges of the back of the binder, said system comprising:

a pair of longitudinally spaced parallel hanger rods that extend transversely with respect to the binders and a plurality of generally longitudinally disposed binder suspender assemblies mounted on said hanger rods,

each suspender assembly comprising a pair of transversely spaced longitudinal support members that extend from one hanger rod to the other hanger rod and a pair of transverse end caps one of which end caps is detachably secured to the ends of the support members adjacent one hanger rod and the other of which end caps is detachably secured to the opposite ends of the support members adjacent the other hanger rod, the ends of the longitudinal support members and the facing surfaces of the transverse end cap detachably secured thereto being configured to define transverse openings through which the adjacent hanger rod extends,

longitudinal binder support rails disposed on the facing inner surfaces of the transversely spaced longitudinal support members, said longitudinal support rails being adapted to engage and support the laterally extending flanges on the back of a binder positioned between the longitudinal support members,

interlock means for the support members and the end caps secured thereto for preventing relative transverse and vertical movement of said support members and said end caps, and

releasable latch means for the longitudinal support members and the transverse end caps detachably secured thereto.

3,857,493

COLLAPSIBLE GARMENT DRYER

Walter R. Bourne, 15 Woodridge Cres., Apt. 604, Ottawa, Ontario, Canada

Filed Sept. 26, 1973, Ser. No. 400,940
Claims priority, application Canada, June 29, 1973, 175337
Int. Cl. A47f *5/10*
U.S. Cl. 211—178 A **5 Claims**

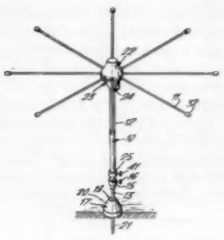
1. A collapsible garment dryer comprising:

a. a rigid standard;

b. a head member secured to said standard adjacent one end thereof and having an end face circumscribing said standard and facing the opposite end thereof, said end face having an annular groove therein;

c. an annular ring located in said annular groove and securely fastened to said head member;

d. a plurality of arms each having a hooked end embracing said annular ring and thereby pivotally attaching the same for free pivotal movement between an operative position wherein they radiate outwardly from the standard to a collapsed position wherein they extend longitudinally along the standard;



e. a collar slidably mounted on said standard and supportingly engageable with the arms respectively in each of the operative and collapsed position of the arms to retain them in their respective positions;

f. lock means for retaining said collar in supporting engagement with the arms in the operative position of the latter to support the same adjacent their pivotal connection to the standard;

g. lock means for retaining the collar adjacent the free end of the arms in their collapsed position; and

h. means on said collar to retain the free end of said arms adjacent said standard when the arms are in their collapsed position.

3,857,494

MODULAR RACK ASSEMBLY

Emidio D. Giardini, New Castle, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed July 16, 1973, Ser. No. 379,789
Int. Cl. A47f *5/10*
U.S. Cl. 211—177 **13 Claims**

1. A modular rack assembly for storing and shipping massive metal articles comprising,

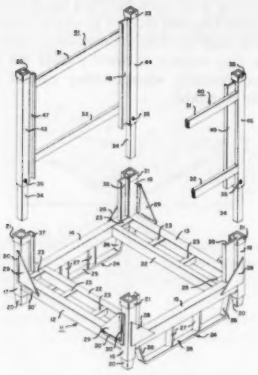
a rectangular shaped rigid metal base including a pair of oppositely disposed side rails, a pair of oppositely disposed end rails, and a vertically disposed leg member fixed at each corner of said base,

each of said leg members including means providing a vertically extending leg groove open in a direction facing the opposite end of said base and in substantial vertical alignment with a leg groove at the opposite end of said base, an upstanding metal post member at each corner of said rack assembly and means engaging each of said post members with the leg member at that corner to support said post members above said leg members,

each of said post members including means providing a vertically extending groove open in a direction facing the opposite end of said rack assembly and in substantial vertical alignment with the leg groove therebelow to provide a pair of open interfacing vertically aligned grooves extending along a substantial length of said leg members and post members at each side of the rack assembly, and

a plurality of wooden boards disposed along each side of said rack assembly to provide a load bearing wall at each

respective side thereof, the plurality of boards at each respective side being superimposed one on top of another with each successive board supported on its edge above



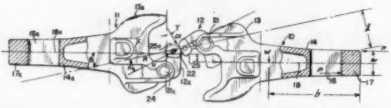
a preceding board and with the opposite ends of each board laterally supported by the means providing said pair of grooves at that side of said rack assembly.

3,857,495

KNUCKLE STRUCTURE FOR COUPLER

Horst Thomas Kaufhold, Chicago, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Dec. 26, 1973, Ser. No. 428,256
Int. Cl. B61g *3/04*
U.S. Cl. 213—151 **2 Claims**



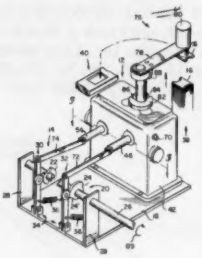
1. A railway vehicle car coupler comprising a shank and a coupler housing having a guard arm side and a knuckle side, a knuckle, pivot means including pin protector radius means mounting said knuckle on said housing for movement between an open position and a closed position, friction forces resisting turning of said knuckle about said pivot means represented by a friction circle having a radius *rf*; wherein *r* is the radius of said pin protector radius means and *f* is the coefficient of friction at said pin protector radius means, said knuckle having a nose, a flat gathering surface of maximum length on said nose, said flat gathering surface being sloped such that in the open position of said coupler a mating closed coupler is slideable therealong with the resultant force of the force normal to said flat gathering surface and the friction force with said mating coupler at one end of the flat gathering surface imparts a moment arm to said coupler capable of swinging said coupler about the butt of said shank, said mating coupler being slideable along said flat face while said knuckle remains in said open position, and said slope of said gathering surface being such that the resultant force at the other end of said gathering surface in the open position of said knuckle lies along a line located approximately tangent to the friction circle.

3,857,496

PLACEMENT ROBOT PROVIDING A VERTICAL AND HORIZONTAL DISPLACEMENT OUTPUT

J. Tim Gonzales, Carmel, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Oct. 10, 1972, Ser. No. 296,292
Int. Cl. B66c *1/02*
U.S. Cl. 214—1 BT **6 Claims**



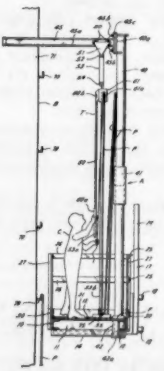
1. A workpiece handling device including:
a. a housing,
b. a single output shaft extending from said housing,
c. first and second control racks supported by said housing and responsive to a control means,
d. said output shaft rotationally responsive to said first rack through a splined periphery on said output shaft,
e. a rack carriage disposed in said housing,
f. said output shaft axially moved by said rack carriage,
g. said rack carriage responsive to a splined shaft lying in a plane transverse to said output shaft,
h. said splined shaft responsive to said second control rack, and
i. a work handling means coupled to said output shaft to be displaced axially and rotationally thereby.

3,857,497

APPARATUS FOR MOUNTING BUILDING PANELS

Joseph R. Shannon, Jr., P.O. Box 40006, Houston, Tex. 77040

Division of Ser. No. 297,996, Oct. 16, 1972, Pat. No. 3,791,094. This application Oct. 4, 1973, Ser. No. 403,511
Int. Cl. B66c *1/00*
U.S. Cl. 214—1 H **9 Claims**



1. An apparatus for mounting building panels on a building structure, comprising:

a platform adapted to receive at least one man thereon and a plurality of building panels;

panel transferring means mounted on said platform and movable therewith for raising the panels separately off of the platform and for laterally moving the raised panel relative to said platform for positioning same for mounting on a building structure; and

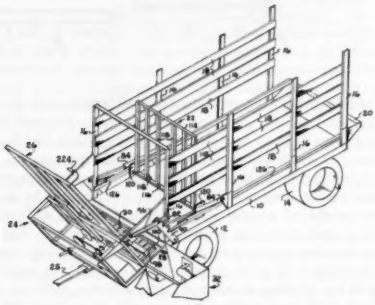
means for lifting said platform and said panel transferring means together from a lower level to an elevated position.

3,857,498

BALE WAGON

Donald M. Grey, Selma, and Lee D. Butler, Kingsburg, both of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Continuation of Ser. No. 139,324, May 3, 1971, abandoned.
This application Aug. 27, 1973, Ser. No. 392,138
Int. Cl. B65g *59/06*
U.S. Cl. 214—8.5 A **3 Claims**



1. In a bale unloading wagon of the type which includes a wheel supported chassis, a generally flat load rack mounted on said chassis and being capable of supporting a stack of bales thereon formed of a plurality of vertical tiers of bales arranged transversely of said load rack, a transfer table disposed adjacent an end of said load rack and being capable of successively receiving a tier of bales from said load rack, bale unloading means capable of unloading said bales in said tier received by said transfer table, and rack means disposed transversely of said load rack and mounted on said load rack for movement in a fore-and-aft direction along said load rack toward said load rack end for advancing said stack in said fore-and-aft direction toward said transfer table at said load rack end, the improvement comprising:

a frame structure mounted at said load rack end including transversely spaced apart guide means which extend generally in said fore-and-aft direction toward said load rack end and mount said transfer table for reciprocatory movement in said fore-and-aft direction between a first position adjacent to said load rack end at which position said table is capable of receiving said tier of bales from said load rack and a second position spaced from said load rack end at which position said table disposes said tier of bales for unloading by said bale unloading means from said wagon;

an indexing mechanism including first means mounted in said fore-and-aft direction along said load rack for reciprocatory movement toward and away from said transfer table and said load rack end and second means mounted to said moveable rack means for connecting said rack means to said first means during movement of said first means toward said transfer table and said load rack end and for disconnecting said rack means from said first means and maintaining said rack means at rest during movement of said first means away from said transfer table and said load rack end;

means pivotally mounted at one end to said load rack end for pivotal movement in said fore-and-aft direction, said means further being pivotally coupled at a first location spaced from its one end to said transfer table and at a second location spaced from its one end to said first means of said indexing mechanism; and

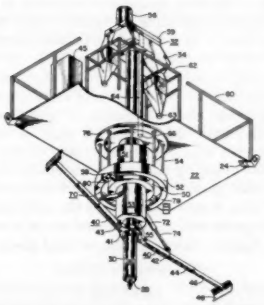
a source of motive power for selectively pivotally moving said means mounted at said load rack end in a reciprocatory manner in said fore-and-aft direction through predetermined forward and reverse strokes to respectively cause during said forward stroke substantially simultaneous movements of said transfer table from its first position to its second position and of said first means of said indexing mechanism toward said load rack end which advances said rack means, being connected to said first means by said second means, toward said load rack end and cause during said reverse stroke substantially simultaneous movements of said transfer table from its second position back to its first position and of said first means of said indexing mechanism away from said load rack end while said rack means, being disconnected from said first means by said second means, is maintained by said second means at rest at said previously advanced position.

3,857,499

CARGO HANDLING EQUIPMENT

Bruce A. Harbolt, Northridge; David A. Claghorn, Los Angeles, both of Calif., and Delbert W. Block, Jerome, Idaho, assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 31, 1973, Ser. No. 411,357
Int. Cl. B65g *33/14*
U.S. Cl. 214—15 D **15 Claims**



1. A device for transferring bulk granular material such as granular fertilizer and the like that comprises:

a platform;

cable attachment means on said platform whereby said platform can be suspended from a surrounding structure;

at least one solids lift mounted on said platform with granular material inlet means below and granular material discharge means located at a solids receiving station above said platform;

at least one solids conveying means supported by said platform and operative to convey granular material laterally towards a solids transfer station beneath said platform and adjacent the lower end of said lift means; and

granular material receiving means carried by said platform at said solids receiving station and in communication with the said discharge means of said solids lift and including at least one solids measuring means carried by said platform and operative to dispense measured masses of a predetermined amount of said granular material at se-

lected intervals whereby said solids can be transferred into containers of uniform amounts.

3,857,500

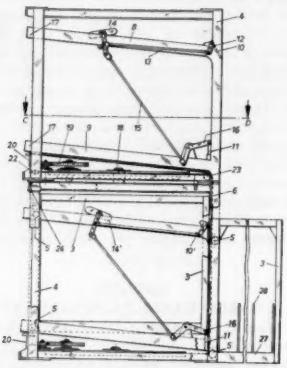
APPARATUS FOR STORING AND STACKING VEHICLES

Alois Goldhofer, Siechenreuteweg, Germany, assignor to Tewi-Pat Anstalt, Vaduz, Liechtenstein

Filed Sept. 5, 1972, Ser. No. 286,070

Int. Cl. E04h *6/06*

U.S. Cl. 214—16.1 CE **2 Claims**



1. Apparatus for storing and stacking vehicles or other goods comprising: a plurality of superimposed box frames having a front side, each of said box frames being of a size to receive a cage therein, vertical guide means fixed to said front side, a plurality of cages with rollers thereon movable in said guide means, a hoisting mechanism mounted in each of said box frame, means connecting a respective hoist mechanism to a respective one of said cages, vertically spaced guide rails mounted in each of said box frames, said vertically spaced guide rails being slightly inclined toward the front side of said box frame, the respective ends of said vertically spaced guide rails located most remotely relative to said front side being closer together than the respective ends ot said vertically spaced guide rails adjacent the front side of said box frames, movable roller engaging flap means mounted on each of said vertically spaced guide rails, lever means connecting said flap means, and lever means operated by the rollers on said cages to selectively guide said cages into and out of a respective one of said box frames relative to said vertical guide means.

3,857,501

APPARATUS FOR LOADING CONTAINERS WITH CARGO

Harry Lassig, and Anton Grosshauser, both of Hamburg-Schenefeld, Germany, assignors to Fordertechnische Forschungsgesellschaft mbH Hamburg-Schenefeld, Germany

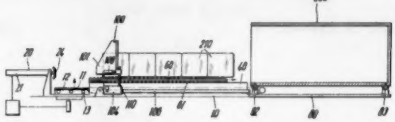
Division of Ser. No. 247,287, April 25, 1972, Pat. No. 3,780,893. This application Sept. 21, 1973, Ser. No. 399,471

Claims priority, application Germany, Feb. 5, 1972, 2205505

Int. Cl. B65g *67/04*

U.S. Cl. 214—41 **17 Claims**

1. An apparatus for loading containers with cargo, preferably cargo on pallets, and for putting down such cargo on loading platforms of transport vehicles and in storage areas in warehouses, storage yards and the like, said apparatus comprising a base with a track for supporting and guiding a movable conveying carriage adapted to receive a plurality of cargo-carrying pallets arranged in a predetermined manner and occupying a total area substantially corresponding to the freight space area of a container to be loaded; a vertically adjustable support disposed at the track end facing said container and adapted to mount a container which is to be loaded and to raise or lower said container so that the upper surface of the floor of said container is substantially coplanar with the pallet receiving upper surface of said conveying carriage to achieve a step-free transition from said conveying carriage to said container floor; and a gate-like clearance indicator frame in the region of said conveying carriage, said frame movable in the longitudinal direction of said track, having a width corresponding substantially to the width of the internal freight space of a container to be loaded and being adapted to align said load-carrying pallets on said conveying carriage, said frame further including gate wings adapted to be moved towards and away from the feed path of said loaded pallets, control means for controlling the movements of said conveying carriage and of said clearance frame as well as the pivotal movements of daid gate wings in such a manner that when a



pair of pallets having a combined overall length corresponding substantially to the width of said container internal frejght space passes through said clearance frame, when said frame is disposed at the feeding end of said conveying carriage, with said gate wings being in an open position, the advancing movement of said pallets on said conveying carriage will be stopped if the combined overall length of daid pallets exceeds the width of said container internal freight space and that after said pallets having been arranged on said conveying carriage, said clearance indicator frame will be moved to a position in front of the loading opening of said container, said conveying carriage with said pallets thereon will be moved into said container interior, said clearance frame gate wings will be closed, and after retracting said conveying carriage from said container interior said clearance frame will be moved back into its initial position and said gate wings will be opened.

3,857,502

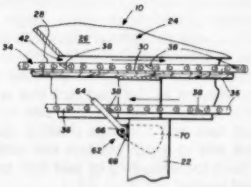
SELF-UNLOADING PARTICULATE MATERIAL DELIVERY SYSTEM

John H. Holland, and Gene O. Fox, both of Norman, Okla. Assignors to Arkansas Rock and Gravel Co., Mufreesboro, Ark.

Division of Ser. No. 203,740, Dec. 1, 1971, Pat. No. 3,731,825. This application Feb. 26, 1973, Ser. No. 335,722

Int. Cl. B60p *1/38*

U.S. Cl. 214—83.36 **18 Claims**



1. A self-unloading particulate material delivery apparatus comprising:

a particulate material receiving hopper defined by opposed side walls and a floor;

a conveyor including a pair of drive chains and a plurality of flights extending between the drive chains;

means for driving the conveyor around a course including a portion extending through the lower portion of the particulate material through to the hopper; and

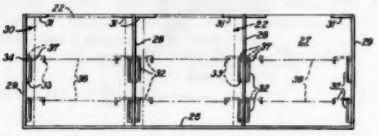
means mounted at one point on said apparatus to provide an indication of a predetermined relationship between the position of at least one of said flights on said course and another point on said apparatus.

3,857,503

REFUSE CONTAINER RETAINING MEANS FOR INVERTABLE CONTAINER RACK OF REFUSE TRUCK

Donald C. Brown, Box 194, Botkins, Ohio 45306

Filed Oct. 30, 1973, Ser. No. 411,339
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 **6 Claims**



1. A refuse container lifting and inverting rack for use with a refuse truck or the like having power means to move the rack between a ground level upright position and an overhead inverted container dumping position, said rack comprising a body portion having a floor and side walls defining at least one compartment for a refuse container, said compartment having an open side through which a container may be placed in the rack or removed therefrom and having an open top, a pair of fixed retainer elements on said side walls at the top of the rack and projecting over said open top of the compartment to prevent endwise movement of a container therein when the rack is inverted, a pair of generally triangular gravity activated retainer plates pivotally mounted in opposing relation on said side walls near and inwardly of the open side of the compartment, the pivot axes of said retainer plates being parallel and somewhat inclined to the horizontal when said rack is at said ground level upright position, said retainer plates then hanging freely and lying substantially flush against said side walls with corresponding vertexes arranged lowermost and corresponding lowermost side edges facing downwardly, and means on said retainer plates for limiting movement of said retainer plates beyond a position where they are substantially perpendicular to said side walls, whereby when said rack is moved toward said overhead inverted dumping position said pivoted retainer plates move by gravity to substantially horizontal opposing positions with their last-named corresponding side edges converging toward the open side of said compartment and projecting inwardly of said side walls to block the movement of a container in the compartment through said open side.

3,857,504

MECHANISM FOR LOCKING REFUSE CONTAINER ON TRUCK PLATFORM

Arthur E. Bausenbach, Rockville Centre, and Frank Palopoli, Massapequa Park, both of N.Y., assignors to Sanitary Controls, Inc., Deer Park, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,181
Int. Cl. B60p *1/64*
U.S. Cl. 214—517 **6 Claims**

1. For use with the combination of a container and a truck having an elongated platform with means for pulling the container along the platform on the truck,

the improvement comprising:

a locking member carried by the container,

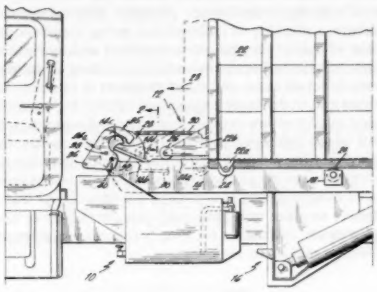
a locking mechanism including a locking element, the element having an inner susrface defining a cavity adapted to engage the locking member when the container is on the platform and the locking member is adjacent to the locking mechanism,

a pivot mounted on the platform substantially in the plane of movement of said locking member,

means mounting the locking element on the platform for movement about said pivot between an open, disengaged position disposed away from the locking member and a closed, engaged position partially enveloping the locking member,

means biasing the locking element to its open position,

the cavity-defining surface of the locking element having an arcuate camming segment shaped so that (1) contact with the locking member of the container, when the locking element is in its open position and when the container is pulled to the end of said platform, forces the locking element to move in only one direction from its open to its closed position against the force of the biasing means, and



(2) forward or rearward movement of the container along the platform does not substantially tend to force said locking element to move from its closed to its open position,

a major portion of the cavity-defining surface of the locking element being circular in shape and serving to partially envelop said locking member when the locking element is in its closed position, the locking element terminating in a head which protrudes between said locking member and said container when the locking element is in its closed position to engage said locking member,

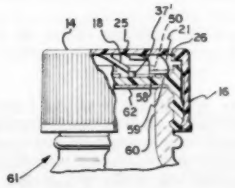
and means releasably latching said locking element in its closed position after it is forced to move to its closed position by contact with the locking member of the container.

3,857,505

SAFETY CLOSURE

G. Victor Mumford, and Richard C. Williams, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 1, 1973, Ser. No. 402,199
Int. Cl. B65d *43/02*
U.S. Cl. 215—9 **8 Claims**



1. A child-resistant closure for containers having an exteriorly threaded finish portion comprising, in combination: an inner cap member having a top panel integrally formed with

a depending skirt portion, said depending skirt portion having threads formed on the interior surface thereof for engagement with said finish portion of said container, an axially extending ring wall integrally formed with the periphery of said inner member top panel, a plurality of spaced apart drive members formed in the outer extremity of said ring wall; an outer cap member having a top panel integrally formed with a depending skirt portion, said depending skirt portion of said outer member loosely encompassing said depending skirt portion of said inner cap member to allow relative rotary and axial movement between said inner and outer members, a plurality of downwardly directed drive lugs integrally formed on the interior of the top panel of said outer member, said drive lugs engaging the spaces between said drive members in one position of axial displacement of said inner and outer members and being disengaged therefrom in a second axial position of said inner and outer members; ratchet lug means formed on one of said inner and outer members and interposed said members; a plurality of inclined leaf spring members, formed on one of said inner and outer members and interposed said members, said leaf spring members providing a biasing force to maintain said inner and outer members in said second axial position and to drivingly engage said ratchet lug means in said second axial position to drive said inner and outer members as a unit in the tightening direction of said closure but slip over said ratchet lug means freely in the untightening direction to prevent unscrewing of said inner member, downward pressure on said outer member overcoming the bias of said leaf spring members to place said inner and outer members in said first axial position; and means for loosely retaining said inner member within said outer member.

3,857,506

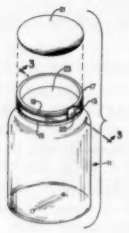
PLASTIC CONTAINER

Robert X. Hafele, Overland Park, Kans., assignor to Ethyl Development Corporation, Kansas City, Mo.

Filed July 16, 1973, Ser. No. 379,450

Int. Cl. B65d *1/02*

U.S. Cl. 215—31 **5 Claims**



1. A hollow, thin-walled, plastic container having

a. a neck portion defining a mouth for said container, said neck having a substantially uniform wall thickness;

b. an inwardly extending sealing web at the uppermost extent of said mouth for hermetically receiving a pealable sealing diaphragm; and

c. an inward indentation on said neck which intersects said sealing web for aiding the removal of said diaphragm upon its being sealed to said sealing web.

3,857,507

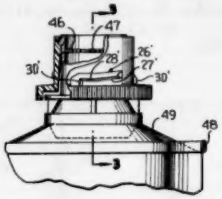
SAFETY CLOSURE FITMENT AND FINISH

Frank H. Lecinski, Jr., Harwood Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 260,105, June 6, 1972, Pat. No. 3,836,034. This application Oct. 16, 1972, Ser. No. 297,734

Int. Cl. B65d *55/02, 55/56;* **A61j** *1/00*

U.S. Cl. 215—218 **15 Claims**



1. A closure comprising a tubular fitment and a cap assembled together for subsequent telescopic press application onto a container finish, said fitment having a frusto-conical interior surface said cap having an end panel and a peripheral skirt with means reinforcing a part of said fitment against outward deflection, said tubular fitment having an interior surface reducing in diameter from a leading surface portion thereof remote from said end panel toward the opposite end thereof adjacent said end panel, said leading surface portion in the area of said reinforcing means having a diameter sufficient to permit telescopic assembly of the cap and fitment on an associated container finish with little initial resistance to the relative telescopic movement, and the diminishing diameter of said fitment above said surface portion thereafter increasing the resistance of telescopic assembly to a point of interference which if offset by radial outward deflection of said fitment above said surface portion, and said fitment terminates at said opposite end thereof in means for axially opposing abutment of an associated container finish thereby precluding unauthorized removal of said fitment and/or cap from a container finish.

3,857,508

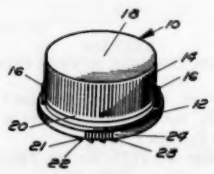
SAFETY CLOSURE AND CONTAINER

Robert L. LaBarge, Ben Avon, Pa., and Charles J. Leftault, Jr., Richmond, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 3, 1973, Ser. No. 402,974

Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*

U.S. Cl. 215—221 **14 Claims**



1. A molded plastic safety closure adapted to close a container having a neck portion with an opening therein, inclined closure retaining means on the exterior of the neck portion and detent means adjacent the neck portion having at least one substantially vertical surface disposed in a plane extending substantially radially of the container neck, said closure comprising a top end wall for closing the opening in the container neck, a depending skirt with internal means for engaging the inclined retaining means on the container neck to secure the closure on the container, and an integral resiliently

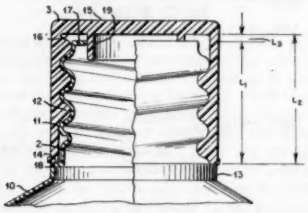
deflectable annular band around the bottom of said closure and rigidly connected to said closure skirt by at least one relatively narrow bridge, said band having at least one downwardly projecting ratchet tooth thereon for engagement against the vertical surface on the detent means on the container when the closure is closed on the container whereby said engagement prevents counter-clockwise rotation of said closure with respect to said container unless said band is deflected upwardly to disengage said tooth from said detent means.

3,857,509

BOTTLE

Marshall Glenn Baldwin, Westport, Conn., and Gilbert Dwayne Miles, Ossining, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,656
Int. Cl. B65d *41/04*
U.S. Cl. 215—329 **8 Claims**



1. A container comprising

a. a body portion,

b. a hollow open-ended cylindrical neck portion protruding from said body portion,

c. said neck portion having a first sealing surface disposed on its top surface and a threaded exterior surface,

d. an annular shoulder disposed around said neck portion,

e. said shoulder being adjacent said body portion and having a first seating surface lying in a plane transverse to the axis of said neck portion,

f. said neck portion having a predetermined height measured from said first seating surface to said first sealing surface,

g. a cap member having a threaded inner surface adapted to engage the threaded exterior surface of said neck portion,

h. said cap member having an open base end, a closed top end, and a second sealing surface, adapted to engage said first sealing surface, disposed on the inner surface of said closed top end,

i. said base end defining an annular second seating surface corresponding to said first seating surface,

j. said cap member having a predetermined depth, measured from said second seating surface to said second sealing surface,

k. said predetermined height of said neck portion being less than the predetermined depth of said cap member.

3,857,510

KETONE CLEAVAGE AND PRODUCTS THEREFROM

Milorad M. Rogic, Wippany, and Robert Fuhrmann, Morris Plains, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 189,373, Oct. 14, 1971,. This application Sept. 1, 1972, Ser. No. 285,681
Int. Cl. C07d *53/06*
U.S. Cl. 230—239.3 A **26 Claims**

1. In a process of nitrosating ketones at a C-C bond adjacent to the ketonic carbon: the combination of features resulting in cleavage to produce a terminal carboxylic acid ester group and an oxime group, which comprises admixing (1) a ketone of the formula

wherein R^1 and R^2 can be each a saturated aliphatic or cyclic hydrocarbon radical containing 1 to 20 carbon atoms, or together form a saturated cyclic hydrocarbon radical, having 5-12 carbon atom in the ring and R^3 is H or R^1; and (2) a nitrosating agent at about equimolar proportion with the ketone; and (3) an alcohol at molar proportion at least about equal to the ketone, in a polar aprotic solvent having a dielectric constant of at least about 12 for a time sufficient to effect scission at the C^1-C^2 carbon bond, to produce a carboxylic ester group at the C^1 carbon, and an oxime group at the C^2 carbon.

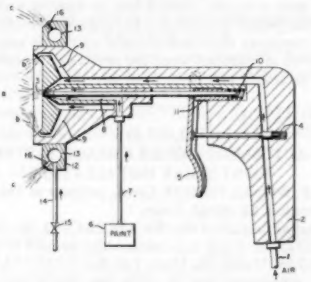
24. The process as claimed in claim **21** wherein said ω-aminohexanoate ester is cyclized to produce ε-caprolactam.

3,857,511

PROCESS FOR THE SPRAY APPLICATION OF AQUEOUS PAINTS BY UTILIZING AN AIR SHROUD

Tirunillayi S. Govindan, Wilmington, Del., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed July 31, 1973, Ser. No. 384,354
Int. Cl. B05b *1/06*
U.S. Cl. 239—11 **11 Claims**



1. In the process for applying an aqueous paint of a thermosetting acrylic enamel to a substrate by air-spraying the paint with a spray gun utilizing atomized air at a flow rate of 5–40 cubic feet per minute and at an air pressure of 30–95 pounds per square inch at the spray gun and a paint flow rate of 5–30 ounces per minute which forms a cone of air atomized paint which is appliedd to the substrate and baked to form a uniform finish on the substrate, the improvement in the use therewith comprising

an air shroud that substantially encircles the cone of air atomized paint, wherein the air of the shroud is at 15°–95°C. and the air flow rate is 10–250 cubic feet per minute, and wherein the air shroud provides a uniform atmosphere for drying the aqueous paint during spraying of the substrate.

3,857,512

REFILL FOR A ROOM DEODORIZER, AND METHOD OF MANUFACTURING AND USING THE SAME

John S. Levey, Westlake Village, Calif., assignor to Days-Ease Home Products Corporation, North Hollywood, Calif.

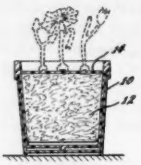
Filed Jan. 21, 1974, Ser. No. 434,851
Int. Cl. A24f *25/00*; A61l *9/04*
U.S. Cl. 239—34 **4 Claims**

1. A refill for a flower pot type room deodorizer wherein a cake of an evaporative deodorizing gel is disposed in an inverted frusto-conical type vessel removably capped at the top

end and comprised of an inner windowed shell and an outer windowed co-axial housing within which said shell is rotatable from a first position wherein the windows in the shell and said housing are in register, to a second position wherein none of said windows is in register, said refill comprising:

A. an inverted frusto-conical flexible walled cup-like container, said container having at least a portion of its inside dimensions corresponding to at least a substantial portion of the inside dimensions of said shell;

B. a frusto-conical cake of deodorizing gel, said cake being disposed within said container with the lowermost end of



said cake spaced from the bottom of said container thereby to provide an air pocket intermediate said lower end of the cake and the bottom of the container; and

C. a closure member removably secured over the top edges of said container,

whereby, when said container is removed and placed on a horizontal surface and the thus-filled container is inverted and held over said closure and its flexible wall defining said air pocket is squeezed, the cake will be ejected from the container onto said closure so that it may then be inserted in said shell when the vessel cap is removed, and will be seated in a close fit in said shell.

3,857,513

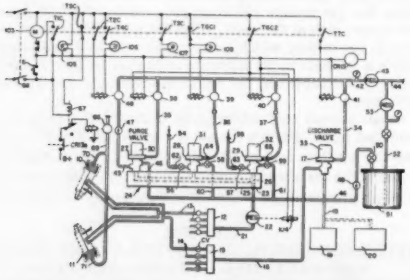
SEMI-AUTOMATIC COLOR CHANGE SYSTEM FOR PAINT SPRAY INSTALLATION

Richard F. Wiggins, Fairfield, Conn., assignor to The Gyromat Corporation, Stratfield, Conn.

Continuation-in-part of Ser. No. 676,824, Oct. 20, 1967, Pat. No. 3,572,366, which is a continuation-in-part of Ser. No. 440,736, March 18, 1965, Pat. No. 3,348,774. This application Nov. 9, 1970, Ser. No. 87,813

Int. Cl. B05b *15/02*

U.S. Cl. 239—70 **5 Claims**



1. A semi-automatic color change system for a paint spray installation having predetermined color change cycles having multiple stages including at least one solvent flush stage, said system comprising

a. plural fluid delivery lines including at least two paint lines and one solvent line;

b. a valve controlled paint spray nozzle;

c. a fluid supply line communicating between said plural fluid delivery lines and said spray nozzle;

d. a fluid pressure regulator interposed in said fluid supply line and being selectively controllable between first and second conditions in which fluid leaves said regulator at comparatively high pressures and comparatively low pressures, respectively;

e. fluid pressure control means for said fluid pressure regulator to select the first or second of said conditions of operation in accordance with predetermined stages of said cycles; and

f. selective fluid delivery control means permitting the communication with said supply line of only one of said fluid delivery lines at a time.

3,857,514

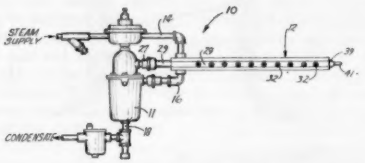
STEAM DISPERSION MANIFOLD

Arthur E. Clifton, Three Rivers, Mich., assignor to Armstrong Machine Works, Three Rivers, Mich.

Continuation of Ser. No. 69,215, Sept. 3, 1970, abandoned. This application May 25, 1972, Ser. No. 257,057

Int. Cl. B05b *1/24*

U.S. Cl. 239—132 **11 Claims**



1. A humidifier for discharging dry steam, comprising;

an elongated hollow steam discharge conduit, said steam discharge conduit being closed at one end thereof and being adapted to be connected to a supply of steam adjacent the other end thereof for permitting steam to flow longitudinally through said discharge conduit;

a row of spaced flow nozzles attached to said steam discharge conduit along one side thereof, said flow nozzles each having a discharge orifice therethrough in communication with the interior of said discharge conduit, said nozzles including a tubular wall extending inwardly into the interior of said discharge conduit so that the inner end of said discharge orifice is disposed inwardly from the inner peripheral wall of said discharge conduit to disrupt the free flow of steam in said discharge conduit;

an elongated second conduit outside of and extending along the length of said discharge conduit and defining a steam receiving chamber in heat transfer relationship with said discharge conduit;

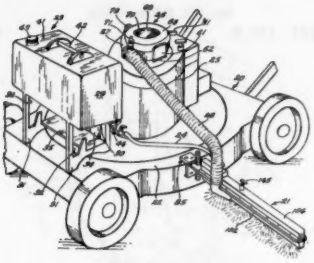
inlet and outlet couplings connected to said second conduit and adapted for connection to a supply of steam so that flow of steam into and through said chamber at least minimizes condensation of the steam flowing within said discharge conduit, the outer ends of the discharge orifices formed in said flow nozzles communicating directly with the atmosphere surrounding said conduits for permitting dry steam within said discharge conduit to flow directly into said atmosphere; and

a steam control unit connected between said outlet coupling and the other end of said steam discharge conduit, said steam control unit having means for separating condensate from the steam leaving said second conduit so that dry steam is supplied to said steam discharge conduit, said steam control unit having a flow control orifice, the cross-sectional area of said flow control orifice being selected with respect to the sum of the cross-sectional areas of the discharge orifices so that the steam in the steam discharge conduit is at least slightly pressurized.

3,857,515
LIQUID SPRAY DEVICE

Michael Maurice Zennie, 1274 Morten St., Cincinnati, Ohio 45208

Filed Apr. 4, 1974, Ser. No. 457,799
Int. Cl. B05b *7/26*
U.S. Cl. 239—169 **18 Claims**



1. A liquid spray device comprising a wheeled ground vehicle, an elongated spray head mounted on the vehicle adjacent the ground and disposed normal to the path of travel of the vehicle, said spray head having an upper liquid reservoir and an air pressure chamber positioned below the reservoir, an engine on the vehicle, a blower mounted on the vehicle, power transmission means between the blower and the engine, and liquid tank on the vehicle positioned on a level above the spray head, a gravity flow hose connecting the tank and the liquid reservoir in the spray head, an air pressure conduit between the blower and the air pressure chamber, a number of longitudinally spaced apart nozzles in the bottom of the spray head, a liquid flow tube depending through the chamber and connecting each nozzle with the reservoir, air passageways connecting each nozzle with the air pressure chamber, valve means interposed between the reservoir and each liquid flow tube, and means uniformly controlling the flow of liquid through all of the tubes.

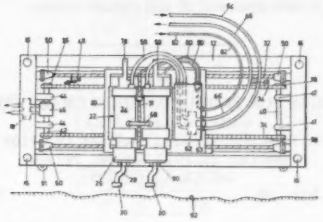
12. A liquid spray device for rotary lawnmowers having a deck supported upon ground engaging wheels and an engine housing supported upon the deck comprising an elongated spray head adjacent to the ground and disposed normal to the path of travel of the lawnmower, said spray head having an upper liquid reservoir and an air pressure chamber positioned below the reservoir, mounting means positioning the spray head on the deck of the lawnmower, a liquid tank, a frame resting upon the deck and supporting the tank on a level above the spray head, a blower means mounting the blower on the engine housing, a clutch means interposed between the blower and the lawnmower engine, a flexible conduit connecting the pressure outlet of the blower to the air pressure chamber in the spray head, a flexible hose connected to the fluid chamber in the spray head, a valved fitting connecting said flexible hose with the tank, nozzle means along the bottom of the spray head, and control means within the spray head metering the flow of liquid and pressure air to the nozzle means.

3,857,516
ROCK-CUTTING MACHINES

Nicholas Simon Hall Taylor, Sturevagen 11, 133 00 Saltsjobaden, and Carl Anders Noren, Kocktorpsvagen 55 a, 132 00 Saltsjo-Boo, both of Sweden

Filed July 7, 1972, Ser. No. 269,835
Claims priority, application South Africa, July 8, 1971, 71/4521
Int. Cl. B05b *15/06*
U.S. Cl. 239—186 **8 Claims**

1. A cutter comprising means adapted to be fixed at least temporarily in position, a nozzle operatively connected to the fixed means and being movable relative thereto and generator means carried by the fixed means and operatively connected to and movable together with the nozzle and being adapted to supply fluid under pressure to the nozzle to produce a high velocity jet, said generator means comprising an ejector piston and an ejector cylinder discharging through said nozzle; means for actuating said generator means comprising a power piston co-axial with said ejector piston and a power cylinder

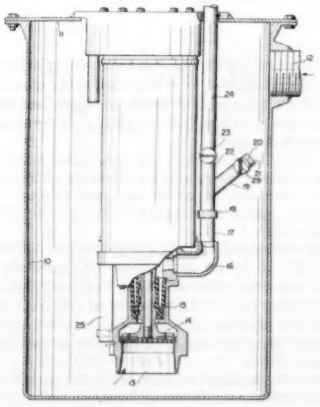


connectable to a source of pressurized hydraulic fluid; a passage extending through said power piston and said ejector piston for passing pressurized fluid into said ejector cylinder; a tube connectable to a source of low pressure fluid carried by said power piston and projecting from said power cylinder, and detector means for detecting the location of the end of the tube, to control the supply of hydraulic fluid to said power cylinder.

3,857,517
ANTI-SIPHON AND PUMP PRIMING FOR SEWAGE GRINDER PUMP

Richard C. Grace, Star Route, and Frank W. Van Luik, Jr., Schenectady, both of N.Y., assignors to Environment/One Corporation, Schenectady, N.Y.

Continuation of Ser. No. 305,712, Nov. 13, 1972, abandoned.
This application Sept. 18, 1973, Ser. No. 398,469
Int. Cl. B02c *13/18*
U.S. Cl. 241—36 **17 Claims**



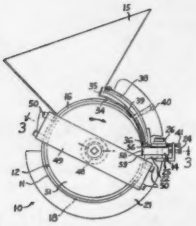
1. An anti-siphoning pumping system for liquids comprising a receiving tank having an inlet and an outlet, pump means having a suction inlet below the liquid level in said tank for tanking suction on the contents of the tank and discharging the same under increased pressure from an outlet, a discharge passage connected to the outlet from said pump means for discharging liquid from said tank under pressure through said tank outlet, first check valve means coupled to said discharge

passage permitting fluid flow only in the direction from said pump outlet to said tank outlet and to prevent backflow of pressurized liquid, conduit means connected at one end to said discharge passage between said first check valve means and said pump outlet, said conduit means being freely open at its other end to a source of venting gas, and second differentially operable check valve means within said conduit means for passing gaseous fluids through said conduit means in either direction and for preventing the passage of liquid from said one end to said open end of said conduit means.

3,857,518
MACHINE FOR PRODUCING HIGH GRADE COARSE GROUND LEAN MEAT

Stephen A. Paoli, 520 Sixth St., Rockford, Ill. 61108

Filed Oct. 16, 1972, Ser. No. 297,634
Int. Cl. A22c *17/00*
U.S. Cl. 241—68 **7 Claims**



1. A machine for mechanically separating high grade lean meat in coarse ground form from low grade meat containing undesirable tissues such as sinew, cartilage, and stringy connective tissue, said machine comprising, in combination:

a. a machine casing;

b. a hollow, power driven rotor journaled in said casing;

c. a plurality of helical cutting elements each having a concave side and a convex side and disposed in axially spaced, nested overlapping relation on the periphery of said rotor;

d. said overlapping helical cutting elements defining initially constricted helical passages opening generally axially of said rotor and communicating with the interior thereof;

e. a pressure bar extending axially of said rotor and spaced from the periphery thereof by an amount not substantially greater than the initial constriction of said helical passages;

f. means for feeding raw material in the form of low grade meat between said rotor and said pressure bar;

g. power means for turning said rotor relative to said pressure bar and thereby forcing the meat axially of said rotor through the constricted helical passages and into the interior of said rotor, leaving the waste tissue on the exterior thereof;

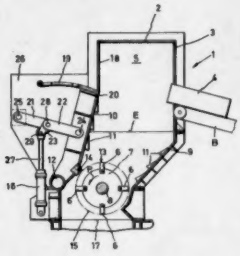
h. means for collecting the lean meat from the interior of said rotor;

i. said helical cutting elements and said pressure bar being adapted to eject the waste from the exterior of said rotor.

3,857,519
HAMMER BREAKER FOR BREAKING-UP BULKY REFUSE MATERIAL

Anton Schafer, Langenfeld, and Karl Probst, Solingen, both of Germany, assignors to Lindemann Maschinenfabrik GmbH, Dusseldorf, Germany

Filed May 23, 1973, Ser. No. 362,914
Claims priority, application Germany, June 10, 1972, 2228408
Int. Cl. B02c *13/04*
U.S. Cl. 241—186 R **4 Claims**

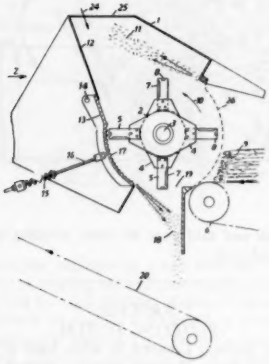


1. A hammer breaker for breaking up bulky refuse material, said breaker including a rotor, a plurality of breaking hammers attached to said rotor spaced apart about the radially outer periphery thereof, a rotor housing, means rotatably supporting said rotor in said housing with the axis of rotation thereof extending substantially horizontally, means for rotating said rotor in said housing so that said rotor rotates about its axis of rotation in a vertical plane and the radilly outer surfaces of said breaking hammers attached to said rotor pass along a vertically arranged outer rotational circle, said housing having means defining an open end thereof below said rotor and walls extending upwardly from said rotor housing to form a supply hopper for conducting the bulky refuse materials downwardly into contact with said breaking hammers on said rotor, said upwardly extending walls including a side wall extending transversely of the plane of the outer rotational circle of said breaking hammers and said side wall being positioned adjacent the periphery of said outer rotational circle along which said breaking hammers move downwardly when said rotor is rotated by said driving means, at least one counter-tool fixed to said side wall, means hingedly mounting said side wall at its lower end for pivotal movement about an axis parallel to said axis of rotation of said rotor and means for moving said side wall about said pivotal axis to move said side wall and said counter-tool toward and away from the outer rotational circle of said breaking hammers, said pivotal axis of said side wall being at substantially the same level as said axis of rotation of said rotor and said side wall extending upwardly from said pivotal axis to above the top-center of the outer rotational circle of said hammers as said rotor is rotated by said driving means, said means for moving said side wall including means for supporting said side wall in a rigid position with said counter-tool immediately adjacent to and radially outwardly of the outer rotational circle so that said counter-tool cooperates with but does not contact said breaking hammers in breaking up the bulky refuse material, said means for moving said side wall being arranged to displace said side wall from the rigid position with said counter-tool located adjacent the outer rotational circle outwardly away from the outer rotational circle while retaining said side wall positioned relative to the remaining said walls so that said supply hopper formed thereby can be increased in cross sectional flow area for relieving any bridging of the bulky refuse material moving downwardly toward said rotor.

3,857,520
OSCILLATING ANVIL DISINTEGRATOR

Joseph Christophe Victor Ducasse, Papaaloa, Hawaii, assignor to Unice Machine Company, San Francisco, Calif.

Filed Oct. 27, 1972, Ser. No. 301,442
Int. Cl. B02c *13/09*
U.S. Cl. 241—189 R **23 Claims**



1. A machine for simultaneously cutting and shredding plant products, such as sugar cane stalks, said machine comprising:

a casing;

a rotor mounted to rotate about an axis thereof in said casing;

a feed opening in said casing, at one side thereof with respect to said rotor;

means for feeding plant products through said feed opening toward said rotor in a direction substantially perpendicular to said axis to said rotor;

anvil means yieldably mouned to said casing, at a side thereof with respect to said rotor opposite said feed opening;

said casing having a chute surface directly above said anvil means;

a plurality of blades rigidly mounted to the periphery of said rotor to rotate therewith;

each of said blades having on the leading edge thereof, with respect to the direction of rotation of said rotor, cutting edge means for cutting into pieces said plant products fed through said feed opening; and

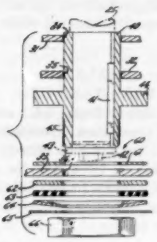
each of said blades having at the outermost end thereof, extending in opposite directions parallel to said axis of said rotor and perpendicular to the plane of said blade, means for throwing the cut pieces of plant products upwardly onto said chute surface, whereafter said pieces of plant products slide downwardly to said anvil means, and for shredding said pieces of plant products against said anvil means.

3,857,521
SHREDDER-BAGGER HAVING BLADE ASSEMBLY

Byron T. Aasland; Douglas D. Dankel, both of Kankakee, and Richard W. Franklin, Momence, all of Ill., assignors to Roper Corporation, Kankakee, Ill.

Filed Sept. 4, 1973, Ser. No. 393,825
Int. Cl. B02c *18/18*
U.S. Cl. 241—243 **6 Claims**

1. In a shredder-bagger for shredding garden debris, the combination comprising a frame defining a shredding chamber of flat cylindrical construction having a top wall, flat bottom wall and circular side wall, means defining a receptacle in the top wall and a discharge chute in the side wall, an engine having a shaft extending axially into the shredding chamber, a blade assembly secured to the shaft, said blade assembly having a hub keyed to the shaft and having a plurality of blades telescoped over the hub, means for clamping the blades together in stacked and spaced relation for rotation as a unit independently of the hub, breakers spaced about the side wall having teeth interdigitated with the tips of the blades,

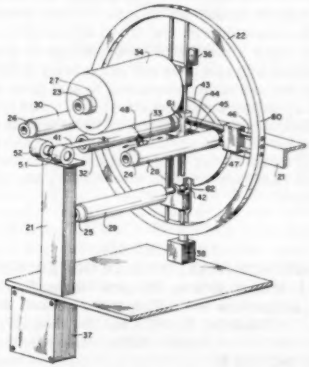


a friction clutch interposed between the lowermost blade and the hub for driving the blades, the blades being offset with respect to one another for acting progressively upon debris introduced into the receptacle, the degree of offset being sufficiently small so that the bodies of blades are largely overlapping the clamping means including spacers interposed between the overlapped bodies of the blades of that the blades together form a rigid box-like assembly.

3,857,522
CONTINUOUS YARN WINDING APPARATUS

Roger H. Fink, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Dec. 1, 1971, Ser. No. 203,760
Int. Cl. B65h *54/02*
U.S. Cl. 242—18 A **2 Claims**



1. A continuous yarn winding apparatus comprising a frame, an incrementally rotatable turret attached to said frame by a hub and series of spokes; an arbor driving roller attached to said frame concentric to the turret; first and second yarn winding arbors slidably attached to said spokes to move in and out of engagement with said arbor driving roller; yarn traversing means adjacent said driving roller for depositing yarn from a yarn supply onto the winding arbors to form a yarn package; spring means for urging the winding arbors toward said hub and into engagement with said arbor driving roller; a cam guide having an arbor engaging face continuous through the rotational increment of the turret from an outermost position of the second winding arbor to a position adja-

cent said driving roller the interaction of the cam guide and spring means tending to cause rotation of the turret around the arbor driving roller while simultaneously guiding the second winding arbor along the spokes and into contact with the arbor driving rollers; turret detent means for restraining rotation of the turret with said second yarn winding arbor in the outermost position until a yarn package has been formed on said first yarn winding arbor; and means for transferring yarn from the yarn traversing means to the second yarn winding arbor after it has engaged the driving roller.

3,857,523

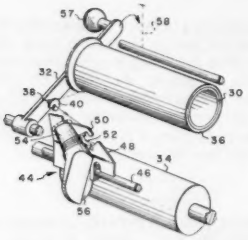
YARN TAKE-UP

Alton L. Lenderman, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 239,874, March 31, 1972,. This application Feb. 7, 1974, Ser. No. 431,248

Int. Cl. B65h *54/02, 54/42*

U.S. Cl. 242—18 DD **1 Claim**



1. A yarn winding arrangement comprising: a drive roll, a pivotally mounted lever arm, a take-up roll rotatably mounted on said lever arm, said lever arm being pivoted to move said take-up roll into and out of engagement with said drive roll, a yarn transfer mechanism having a severing means and being operably associated with and driven by said drive roll to take up yarn when a completed yarn package is moved out of engagement with said drive roll and is being doffed from said take-up roll and means connected to said lever arm to hold yarn in a predetermined position when the yarn is being taken up by said yarn transfer mechanism and when the take-up roll is being pivoted into operative position adjacent said drive roll, said means having a notch therein to hold and guide yarn from the yarn supply until it is severed by said yarn transfer mechanism.

3,857,524

SURFACE ENVELOPER TRANSFER WINDER

James J. Melead, Roscoe, Ill., and Stanley C. Zink, Fulton, N.Y., assignors to Beloit Corporation, Beloit, Wis.

Filed Oct. 5, 1973, Ser. No. 404,107

Int. Cl. B65h *19/26*

U.S. Cl. 242—56 R **23 Claims**

1. An apparatus for continuously winding a web into a plurality of spools comprising:

a surface winding drum having a fixed rotational axis;

a core;

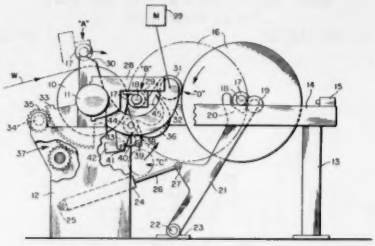
means to position said core into contact with said winding drum to receive the web to be wound into spools on the core;

an enveloper roll;

guide means to position said enveloper roll to engage the spool as it moves away from said winding drum while maintaining surface winding of the web between said enveloper roll and said spool;

a web severing means;

said severing means being positionable between said winding drum and said enveloper roll to sever said web and urge transfer of the web leading edge between said winding drum and said core to cause winding of said web about said core.



3,857,525

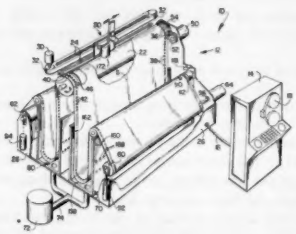
PLOTTING SYSTEM

Heinz Joseph Gerber; Leonard G. Rich, both of West Hartford; Ronald Bruce Webster, Melrose; Robert Louis Martino, Ellington, all of Conn.; Earle Merritt Chase, Wilbraham, Mass., and Anthony D'Onofrio, West Hartford, Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Apr. 20, 1973, Ser. No. 353,117

Int. Cl. G65h *25/26*

U.S. Cl. 242—57.1 **20 Claims**



1. Apparatus for winding a strip of sheet material onto a rotatably driven reel comprising:

adjustable support means including a reel support having an adjustable member at one end of the reel defining the tram of the reel in the support for holding the strip and the rotatably driven reel with the axial direction of the reel and the longitudinal direction of the strip angularly adjustable relative to one another;

motor means connected with the adjustable member in the adjustable support means for varying the angular adjustment of the axial direction of the reel and the longitudinal direction of the strip;

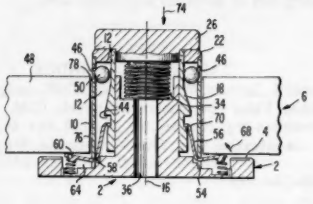
sensing means for detecting the lateral position of the strip; and

motor control means interconnecting the sensing means and the motor means for causing the angular adjustment of said axial and longitudinal directions to be varied to thereby limit the axial shifting of the strip as the strip is wound onto the reel.

3,857,526
REEL MOUNTING APPARATUS

William Arnold Dischert, Burlington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 9, 1973, Ser. No. 414,321
Int. Cl. B65h 17/02
U.S. Cl. 242—68.3 10 Claims

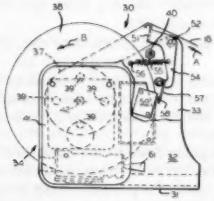


1. A device for maintaining a reel thereon, comprising: a base member, a housing on said base member surrounding a central axis and having a plurality of spaced tapered apertures in the periphery thereof, a corresponding plurality of first elements within said housing freely movable toward and away from said axis, a plurality of second elements passing through a portion of the periphery of said housing, actuating means mounted within said housing and having two stable positions, means including said second elements for placing said actuating means in one of said two stable positions, the device being so constructed and arranged that with said actuating means in one of said positions, said first elements communicate through said apertures to urge said reel toward said base member and away from said axis.

3,857,527
PRECISION PAPER TAKE-UP DEVICE FOR HIGH SPEED WEB FEED PRINTER

Raymond E. Kranz, Mount Prospect, Ill., assignor to Extel Corporation, Chicago, Ill.

Filed Sept. 13, 1972, Ser. No. 288,486
Int. Cl. B65h 17/02, 25/22
U.S. Cl. 242—75.5 2 Claims



1. A precision paper take-up device for a high speed printer utilizing a web as a record medium and advancing the web from the printer in intermittent steps, comprising:

a reel for storing a web;

a bail for engaging the web at a location adjacent the reel, the bail being pivotally movable between a home position and an actuated position;

a bail stop member on the bail;

a fixed stop member positioned in the path of the bail stop member, the two stop members conjointly defining the home position for the bail;

a normally energized electric motor, operatively connected to the reel to apply a limited torque to the reel tending to rotate the reel in a take-up direction to wind the web on the reel and maintaining the web under limited tension;

sensing means, responsive to movement of the bail, for de-energizing the motor whenever tha bail moves from its home position toward its actuated position;

and bias means, comprising a spring connected to the bail, biasing the bail toward and tending to maintain the bail in its home position, but permitting movement of the bail toward its actuated position in response to an abrupt engagement of the web with the bail in a take-up movement of the web;

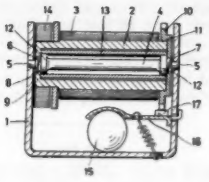
the bias means applying sufficient force to the bail to pull a limited portion of the web from the reel, with the motor de-energized, and return the bail to its home position, thereby again energizing the motor so that the motor is maintained energized continuously except for brief intervals when the bail is moved away from its home position as aforesaid;

the bias means further comprising a retainer device for releasably retaining the bail in its home position, preventing bouncing of the bail or reel on return of the bail to its home position.

3,857,528
SAFETY BELT REEL WITH TORSION ROD

Ernst Fiala, Braunschweig-Querum, Germany, assignor to Wolf-Dieter Klink, Lindach, Germany

Filed May 8, 1973, Ser. No. 358,289
Claims priority, application Germany, May 9, 1972, 2222742
Int. Cl. B65h 75/48
U.S. Cl. 242—107.4 5 Claims



1. In a safety belt wind-up device having a belt wind-up drum with a hollow interior, an energy conversion device comprising a torsion rod mounted in the hollow interior of the wind-up drum and having a first and second ends corresponding to respective first and second ends of the wind-up drum, means for rigidly connecting said first end of said torsion rod to the corresponding first end of the wind-up drum, the second end of the wind-up drum being freely rotatable, means actuable for anchoring said torsion rod against rotation at said second end thereof so that when said second end of said torsion rod is anchored against rotation, said torsion rod absorbs energy by torsion of said first end thereof relative to said anchored second end thereof, a rigid tube surrounding said torsion rod and having a peripheral wall disposed between said torsion rod and the inner surface of the belt wind-up drum for limiting bending of said torsion rod and for preventing a bent torsion rod from jamming against the drum and interfering with the energy conversion characteristics of said torsion rod.

3,857,529
BOBBIN

Thomas Edgar Pitts, Cranston; Robert Earl Morton, Warwick, and Manuel G. Teixeira, Cumberland, all of R.I., assignors to Lessona Corporation, Warwick, R.I.

Filed Sept. 13, 1973, Ser. No. 396,727
Int. Cl. B65h 75/12
U.S. Cl. 242—118.3 5 Claims

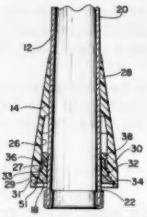
1. A bobbin for receiving strand material comprising,

an elongated generally tubular member having forward and base ends,

an element having a generally frustro-conical outer strand receiving surface positioned on said base end of said tubular member with the base of said element orientated towards the base of said member to provide a zone of enlarged diameter around said member and

a generally circular collar positioned on said member and intermediate between said member and said element,

said collar having means for positive connection to both said member and said element,



said means for connecting said collar to said member comprising a plurality of teeth on an inner surface thereof,

said teeth in engagement with outer surface portions of said member, and

said collar having forward and base ends correspondingly orientated with said forward and base ends of said member, said collar forward end having a plurality of longitudinally orientated deflectable legs extending therefrom, each of said legs having a terminal foot having upper and lower surfaces, said upper surface in engagement with inner surface portions of said element and said inner surface having an inwardly extending tooth of such connecting means thereon.

3,857,530

REEL

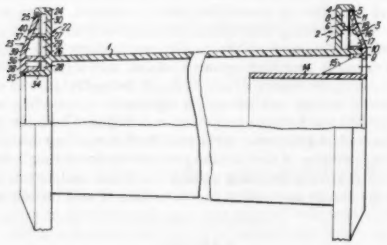
Hubert Brian Mobey, Upholland, nr. Wigan, England, assignor to Industrial Reels Limited, Lancashire, England

Filed Nov. 13, 1972, Ser. No. 305,714

Claims priority, application Great Britain, Nov. 12, 1971, 52748/71

Int. Cl. B65h *75/14*

U.S. Cl. 242—118.7 **9 Claims**



1. A plastics reel comprising a tubular core and two end flanges of circular cross-section at least one of which flanges comprises two annular flange discs secured face to face, wherein one of the flange discs is integral with the tubular core and the flange discs of said flange have on their adjoining faces at least one pair of ribs lying between and concentric with the radially inner and outer edges of the flange, the end surfaces of said concentric ribs abutting and being joined by an adhesive, and a plurality of pairs of ribs which extend radially between the pair of abutting concentric ribs and each adjoining edge of the flange or, where at least two pairs of abutting concentric ribs are present, between each edge and the neighbouring pair of abutting concentric ribs and also between adjacent pairs of abutting concentric ribs, the radially extending ribs on one end flange disc corresponding with the radially extending ribs of the other reel flange disc.

3,857,531

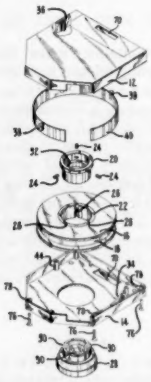
TAPE REEL CARTRIDGE

Johannes K. Jantzen, Mountain View, Calif., assignor to International Video Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 301,105, Oct. 26, 1972,. This application Mar. 29, 1973, Ser. No. 346,945

Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*

U.S. Cl. 242—197 **8 Claims**



1. In a tape reel cartridge having a top, a bottom and side walls adapted to form an enclosure structure for containing a tape reel on which is wound a magnetic tape, wherein the enclosure structure has a first opening in a side wall through which a magnetic tape is extendible and a second opening in the bottom through which a drive spindle is insertable, the improvement comprising:

a tape reel contained in said cartridge, said tape reel having a hub,

a displaceable adapter ring inserted in said tape reel hub, said adapter ring adapted for releasable engagement by said hub spindle to support and rotate said tape reel in the cartridge,

a first tape guide fixed to the enclosure structure, said first tape guide extending from immediately adjacent the first opening around a portion of the periphery of said contained tape reel, and

a second tape guide displaceable from the enclosure structure, said second tape guide extending from said first tape guide, around and within the periphery of said contained tape reel and hence adjacent the first opening in the enclosure structure opposite said first guide.

3,857,532

HIGH SPEED TAPE CASSETTE

Cedric R. Bastiaans, 133 Glenhurst Dr., Verona, Pa. 15147

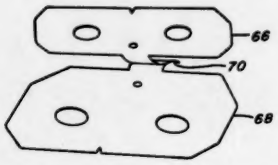
Division of Ser. No. 254,691, May 18, 1972. This application Aug. 8, 1973, Ser. No. 386,685

Int. Cl. G11b *23/10;* **H05f** *3/00*

U.S. Cl. 242—199 **2 Claims**

1. A magnetic tape cassette comprising a casing of upper and lower mating halves, a pair of spaced reel hubs within the

casing, a plurality of tape guides within the casing, a magnetic tape extending from one of said reel hubs around said guides to the other of said reel hubs, sheets of electrically conductive material lining the inner surfaces of the upper and lower walls



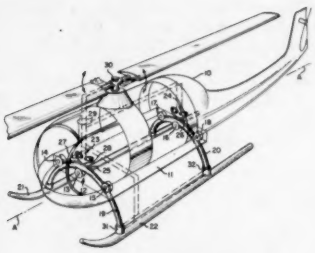
of said casing above and below said reel hubs, said upper and lower sheets being provided with tabs which pass through a side wall of the cassette for engagement with ground potential to prevent the buildup of the electrostatic charge on said magnetic tape.

3,857,533

HELICOPTER SELF-LEVELING LANDING GEAR

Samuel H. Mason, 603 Virginia Ter., Santa Paula, Calif. 93060

Filed Jan. 28, 1974, Ser. No. 437,347
Int. Cl. B64c *25/32*
U.S. Cl. 244—17.17 **10 Claims**



1. A helicopter self-leveling landing gear including:

a. a helicopter having a lower base frame;

b. guide means on said base frame;

c. at least one curved track member of inverted U-shape having a central portion passing through said guide means and its opposite end portions curving downwardly from the central portion toward the ground, the track member lying in a plane normal to the longitudinal axis of the helicopter and being movable through the guide means to thereby vary the distance between each end and the ground;

d. landing skids extending generally parallel to the longitudinal axis of the helicopter secured respectively to the ends of the track member; and,

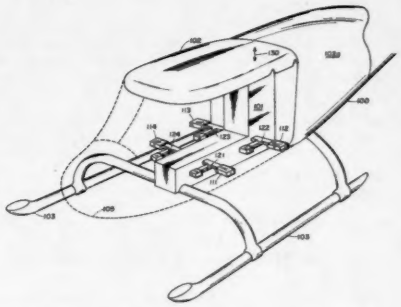
e. locking means on the base frame coupled to the central portion of said track member for locking the track member to the base frame in an immovable position, whereby the level of one landing skid relative to the other may vary by movement of the track member through the guide means such that said base frame and helicopter may be maintained at a level position when said landing skids engage uneven terrain during landing wherein one landing skid is at a higher level than the other, and said locking means actuated to lock the track member and thus the skids relative to the base frame after landing to maintain the base frame and helicopter level.

3,857,534

MULTI-FREQUENCY HELICOPTER VIBRATION ISOLATION

Jan M. Drees, Dallas, and David Shipman, Arlington, both of Tex., assignors to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 223,442, Feb. 4, 1972, abandoned. This application Apr. 2, 1973, Ser. No. 346,951
Int. Cl. B64c *27/04*
U.S. Cl. 244—17.27 **7 Claims**



1. A system for multi-frequency vibration isolation of a load in an aircraft which comprises:

a. a first beam cantilever supported from said fuselage and extending longitudinally in a plane perpendicular to the direction of vibration to be isolated and exhibiting a vibration node at a primary frequency,

b. a second beam cantilever supported from said primary beam in the region of said node and exhibiting a vibrational node at a location spaced from said first beam and at a frequency which is a multiple of said primary frequency, and

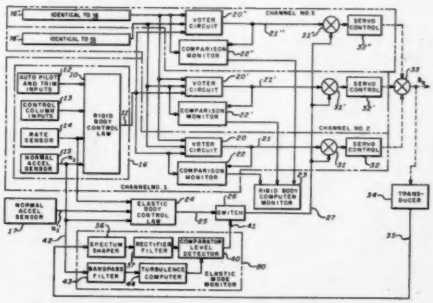
c. linkage means supporting said load in the region of said second node.

3,857,535

MONITOR FOR THE ELASTIC MODE STABILIZING CHANNELS OF AN AUTOMATIC FLIGHT CONTROL SYSTEM

Stephen S. Osder, Scottsdale, Ariz., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Sept. 22, 1972, Ser. No. 291,441
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 M **11 Claims**



1. In an automatic flight control system for aeroelastic navigable craft having a control surface, said automatic flight control system having an elastic mode stabilizing channel for controlling said control surface in a manner normally to reduce bending motions of said craft, the combination comprising

sensor means for effectively detecting the level of control activity applied to said control surface and providing a sensor signal in accordance therewith,

frequency spectrum shaping means responsive to said sensor signal for transmitting only elastic mode frequencies within the normal elastic mode bandwidth of said craft to provide a filtered sensor signal representative of the level of control activity applied by said elastic mode stabilizing channel to said control surface,

means for establishing a threshold greater than the normal level of said control activity,

detector means responsive to said filtered sensor signal and to said threshold for providing a disabling signal in accordance with said filtered sensor signal exceeding said threshold,

and

disabling means responsive to said disabling signal for disabling said elastic mode stabilizing channel in accordance with said filtered sensor signal exceeding said threshold, thereby rendering said elastic mode stabilizing channel ineffective in controlling said control surface.

3,857,536

FROG WITH CLOSABLE WHEEL OVER-RUN

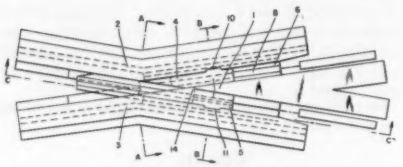
Ruthard Dohse, Essen-Bredeney; Curt Edeling, Essen-Rellinghausen, and Josef Eisnmann, both of Munchen, all of Germany, assignors to Elektro-Thermit GmbH, Berlin, Germany

Filed Oct. 15, 1971, Ser. No. 189,603

Claims priority, application Germany, Oct. 24, 1970, 2052349

Int. Cl. E01b *7/10*

U.S. Cl. 246—435 **7 Claims**



1. A switch point comprising a rigid frog point, rigid wing rails, filler means in the interstice between the frog point and wing rails, said filler means being mounted in vertically extending guide means, and wedge means for raising and lowering said filler means.

3,857,537

HOLDER FOR A PAINT PAIL AND APPLICATOR

Joseph E. Swalinkavich, Jr., 3440 Kyle Ave. North, Robbinsdale, Minn. 55422

Filed May 11, 1973, Ser. No. 359,508

Int. Cl. B44d *3/14*

U.S. Cl. 248—210 **3 Claims**

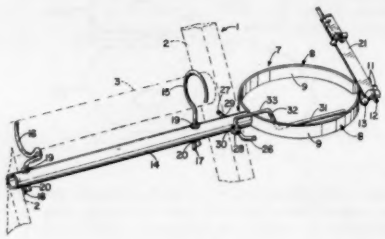
1. For use with ladders comprising laterally spaced longitudinal side rails and generally horizontal portions including transverse rungs connecting the side rails, a holder for a paint pail and an applicator comprising:

a. a generally horizontally disposed circular clamp for encompassing engagement with the upper end portion of a pail and including a pair of opposed clamping members having opposed arcuate intermediate portions, mounting end portions, and outer end portions projecting generally radially outwardly from said arcuate portions;

b. support means including a support rod normally disposed in generally parallel ralationship to the rungs of a ladder when mounted on the ladder and having a hollow end portion, said mounting end portions of the clamping member extending axially within said hollow end portion;

c. a tool supporting member having a mounting shank extending transversely through said hollow end portion and said mounting end portions of said clamp;

d. means for releasably locking said tool supporting member on said support rod;



e. mounting means carried by said clamp for supporting a paint applicator above said clamp;

f. and clamping screw means connecting said outer end portions of the clamping members and operative to exert clamping pressure thereon.

3,857,538

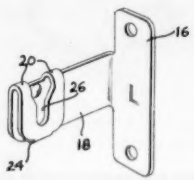
CURTAIN ROD BRACKET

John E. Williamson, West Barrington, R.I., assignor to Kenney Manufacturing Company, Warwick, R.I.

Filed Oct. 12, 1970, Ser. No. 80,057

Int. Cl. A47h *1/10, 5/14*

U.S. Cl. 248—263 **9 Claims**



1. For a curtain rod having a stud mounted on one end for supporting that end of the rod, which stud has a shank portion adjacent the rod and a flat head portion of greater dimension transverse to the rod axis than the corresponding dimension of said shank portion, a support bracket comprising: a base, a support web on said base extending outwardly therefrom, a generally U-shaped receptacle having upwardly extending arms, the upper portions of said arms spaced from each other by an amount greater than said transverse dimension of said stud head portion, the lower portions of said arms spaced from each other by an amount less than said transverse dimension of said stud head portion but greater than the corresponding dimension of said stud shank portion whereby said rod when engaged in said bracket is supported against downward tilting forces by the pressure of said arms and support web against said stud head, means for connecting the upper ends of said arms to said web and for holding said upper ends in fixed spacial relation to said web, and stop means on a lower margin of said receptacle bridging the space between said lower margin and said web to prevent motion of the lower portion of said receptacle toward said web.

3,857,539

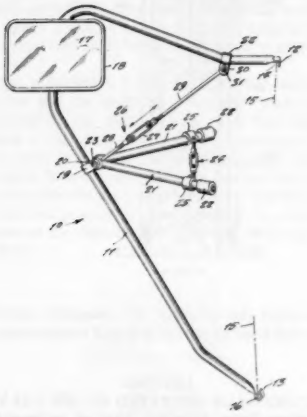
SAFETY MIRROR ASSEMBLY

Harry H. Kavanaugh, 4101 N. Grand Blvd., Peoria, Ill. 61614

Continuation-in-part of Ser. No. 201,001, Nov. 22, 1971, abandoned. This application May 10, 1973, Ser. No. 359,068

Int. Cl. B60r *1/00*

U.S. Cl. 248—475 R **8 Claims**



1. A safety mirror assembly comprising:

a a bracket bar supporting a mirror,

b said bracket bar having an angle shaped hook formed on an upper end and a U-shaped hook formed on a lower end thereof,

c a pair of diverging legs supported at one end by a clip fitted around an intermediate portion of said bracket bar,

d the opposite diverging ends of said pair of legs being fitted with a tip for positioning against the outer side of a vehicle door,

e a first turnbuckle unit disposed between diverging ends of said legs to maintain said diverging ends at a fixed distance, and

f a second turnbuckle unit disposed between an upper and lower portion of said bracket bar for firmly retaining said upper and lower hook ends firmly against the upper and lower edges, respectively, of said vehicle door.

3,857,540

APPARATUS FOR CASTING MATERIAL USING A COLLAPSIBLE STRUCTURE

Fred L. Ecker, 1905 Liliano Pl., Sierra Madre, Calif. 91024

Division of Ser. No. 158,490, June 30, 1971, Pat. No. 3,705,220, which is a continuation-in-part of Ser. No. 12,759, Feb. 19, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 289,857

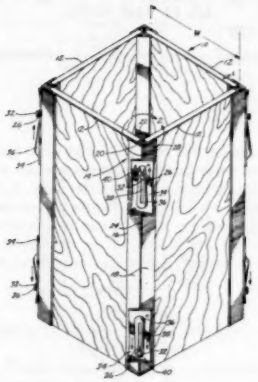
Int. Cl. E04g *13/02*

U.S. Cl. 249—48 **16 Claims**

1. Collapsible apparatus for rigidly locking together a collapsible form structure comprising:

a. an outer clamping structure having diverging first and second interconnected sides, facing and diverging surfaces, one on each of the sides, for engaging and supporting one of a pair of form sides to be clamped, a stop affixed on each of said surfaces and spaced away from the edge of the respective side opposite from the interconnection, each stop defining a plane against which the edge of one of such form sides may be positioned, the outer clamping structure having at least one opening therethrough intermediate said sides;

b. a "T" shaped wedge comprising an elongated, substantially flat rectangular-shaped wedge member in between the planes formed by the diverging surfaces and a leg member intersecting the wedge member comprising first and second spaced apart sharp corners on the wedge member each associated with a different one of the diverging surfaces to engage and wedge in between such pair of form sides and thereby lock the form sides in place against the diverging surfaces, said sharp corners each being defined by two further surfaces on the wedge member, the planes of each such two further surfaces each



having a diverging angle with respect to the associated surface of said first and second sides;

c. a coupling member movably extending through said opening and having an end coupled to said leg member; and

d. a retracting and locking member for retracting said wedge toward both said diverging surfaces to thereby wedge and hold such pair of positioned form sides against the facing surfaces.

3,857,541

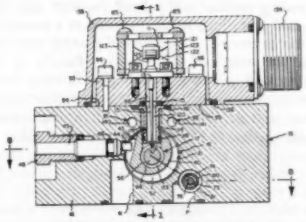
SERVOVALVE WITH OSCILLATION FILTER

Daniel C. Clark, Waldaecker, Germany, assignor to Moog Inc., East Aurora, N.Y.

Filed June 14, 1973, Ser. No. 369,789

Int. Cl. F16k *31/40;* **F15b** *13/043;* **F16k** *47/00*

U.S. Cl. 251—30 **7 Claims**



1. In an electrohydraulic servovalve including a body having a compartment in which a valve spool is slidably arranged leaving chambers at opposite ends of said spool, said servovalve being prone to oscillate at one or more characteristic resonant frequencies resulting in pressure variations in such spool end chambers, the improvement thereof which comprises acoustic filter means for each of said spool end chambers and severally arranged to provide a wave tube having an open end communicating with its corresponding one of said

spool end chambers and having a length to provide anti-resonance for one characteristic frequency.

3,857,542

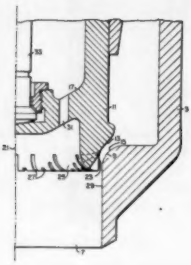
NOISE SUPPRESSING THROTTLE VALVE

Frank J. Heymann, Wilmington, Del., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 260,226, June 6, 1972, abandoned. This application Sept. 7, 1973, Ser. No. 395,311

Int. Cl. F16k *47/02*

U.S. Cl. 251—120 **7 Claims**



1. A valve for a fluid, said valve comprising a fluid inlet port and a fluid outlet port, a plug and a seat, said seat being interposed between said ports and adapted to cooperate with the plug to block the flow of fluid between said ports, when the plug is seated; said plug having a seating surface, which registers with the seating surface of said seat, a hollow cylindrical portion, a web portion which traverses the cylindrical portion and is disposed adjacent the plug's seating surface, and a relatively thin wall skirt portion disposed downstream of the plug's seating surface to form a cavity within the downstream end of the plug; said skirt having a plurality of different depth serrations, which generally originate an equal distance from the plug's seating surface and extend through said skirt into said cavity; said serrations being disposed in a predetermined irregular order to provide a plurality of passageways of different depth to the inside of said cavity, whereby as the plug separates from said seat, the fluid begins flowing through all the passageways to the inside of said cavity producing incoherent shock waves, which inhibit shock cell oscillations to attenuate the noise produced by the high velocity fluid.

3,857,543

LIQUID METERING DEVICE

Joseph E. McKeen, 10861 Elm Ave., Lynwood, Calif. 90262

Filed Mar. 16, 1973, Ser. No. 342,235

Int. Cl. B05b *3/14;* **F16k** *31/02*

U.S. Cl. 251—129 **7 Claims**

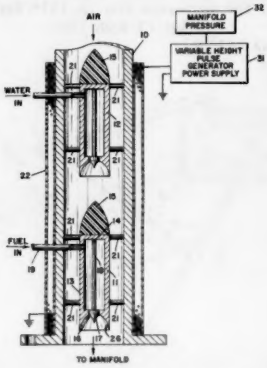
1. A liquid metering device comprising:

a compartment having an opening therein;

a head slidably disposed within said opening;

a rod disposed within said compartment having one end connected to said head and the other end to said compartment;

said rod and said housing being made of a material which,



when under the influence of a magnetic material, will cause said head to retract into said compartment.

3,857,544

ELECTRICALLY OPERATED RELIEF VALVES

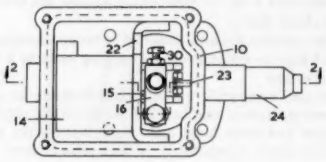
Ronald William Rigby, Dorridge, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Dec. 15, 1972, Ser. No. 315,403

Claims priority, application Great Britain, Dec. 15, 1971, 58166/71

Int. Cl. F16k *31/02*

U.S. Cl. 251—133 **8 Claims**



1. A pressure relief valve comprising a housing having an inlet and an outlet, a closure member movable in response to a pressure in said inlet to open the valve, a torque motor, a linkage operatively connecting a shaft of said torque motor to said closure member, said shaft being rotatable in a direction to open the valve in response to an electrical control signal, biasing means urging the shaft to rotate in a direction to shut the valve and means for adjustably varying movement of the closure member in response to a given angular movement of the shaft, said linkage including a part secured to said shaft for rotation therewith and a stem extending transversely of the axis of said shaft and engaging said part and said closure member, the axis of said stem being spaced from the axis of said shaft.

3,857,545

VALVE FOR DEEP VACUUM CHAMBERS

John D. Santi, West Allis, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed June 14, 1973, Ser. No. 369,839

Int. Cl. F16k *31/524*

U.S. Cl. 251—229 **8 Claims**

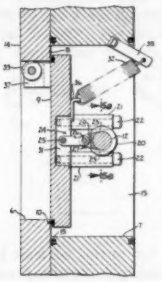
1. A valve for a vacuum chamber or the like comprising:

A. a valve body in which there is a passage and which has an annular surface in said passage that faces in one axial direction and defines a valve seat;

B. a disc-like valve member having a front face with a circumferential portion that can be sealingly engaged with said valve seat in a closed position of the valve member, said valve member leaving said passage substantially unobstructed when it is in an open position in which its front face is substantially parallel to the passage axis;

C. a shaft extending substantially diametrally to the passage and which is spaced in said one axial direction from the valve seat, said shaft being constrained to rotation about its axis;

D. means providing a first connection between the valve member and the shaft by which the valve member is supported on the shaft with its front face substantially parallel to the shaft axis, said first connection providing for rotation of the shaft relative to the valve member and for bodily flatwise motion of the valve member relative to the shaft between the closed position of the valve member and another position thereof in which the valve member is between the shaft and the valve seat and is spaced from the latter;



E. means providing a second connection between the valve member and the shaft by which rotation of the shaft through one predetermined angle effects flatwise motion of the valve member between its closed position and said other position and by which rotation of the shaft through another predetermined angle effects flatwise rotational motion of the valve member between its said other position and its open position, the last mentioned means comprising a link having at one end thereof a pivotal connection with the valve member and at its other end a pivotal connection with the shaft that is eccentric to the axis thereof;

F. yielding biasing means reacting between the valve body and the valve member to urge the latter from its open position towards its said other position; and

G. cooperating slidable stop means on the valve body and on the valve member, spaced from the shaft, engageable upon swinging of the valve member from its open position to its said other position to define the latter and cooperating with the biasing means to confine the valve member to flatwise motion between its said other position and its closed position.

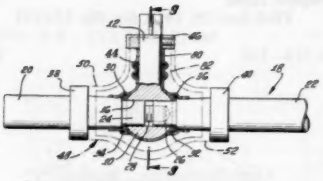
3,857,546

BALL VALVE WITH FILAMENT WOUND BODY

Robert W. Quirk, Los Angeles, Calif., assignor to Valve Systems International, Inc., Chatsworth, Calif.

Filed July 23, 1971, Ser. No. 165,622
Int. Cl. F16k *27/06, 5/06*
U.S. Cl. 251—315 **3 Claims**

1. A ball-type valve comprising a valve body having a flow passage extending therethrough and having a laterally extending neck portion, a generally spherical ball having a flow passage extending therethrough and terminating in ports at the circumference of the ball, a stem connected to said ball and having a constant-diameter portion projecting laterally of said valve body through said neck portion thereof, a pair of annular ball seals embedded in said valve body in contact with said ball and surrounding the interior junctions of the flow



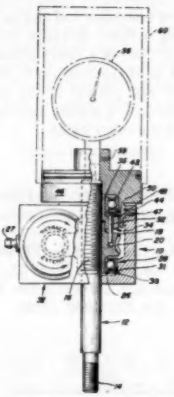
passage of said valve body with said ball, an annular stem seal embedded in said neck portion of said valve body and encircling said stem, said valve body, including said neck portion thereof, comprising a plurality of layers of a resin-impregnated filament wound around said ball and around said ball and stem seals, and a membrane enclosing said ball, said stem, and said ball and stem seals, and over which filament is wound.

3,857,547

AUTOMATICALLY COMPENSATING JACK CONSTRUCTION

Anthony G. Profet, Schaumburg, Ill., assignor to Templeton, Kenly & Company, Broadview, Ill.

Filed Mar. 18, 1974, Ser. No. 451,730
Int. Cl. F16h *55/18;* **B66f** *3/18*
U.S. Cl. 254—103 **10 Claims**



1. In a jack construction of the type described, the combination comprising a load-moving screw, a worm gear having a threaded portion threadedly engaging said screw and imparting axial movement thereto upon worm gear rotation, an automatically compensating nut spaced from said worm gear having a threaded portion threadedly engaging said screw, means interconnecting said worm gear and said automatically compensating nut for rotating said worm gear and automatically compensating nut as a unit relative to said screw and permitting variances in the spacing between said worm gear and automatically compensating nut along an axis parallel to the axis of said screw, and means resiliently loading said automatically compensating nut whereby the threads thereof urge one face of the screw threads in one axial direction, and the opposed face of said screw threads is loaded in an opposed

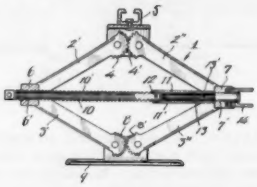
axial direction by the threads of said worm gear in the normal course of extended jack use.

3,857,548

PANTOGRAPH-TYPE JACK

Tsuneo Takeuchi, No. 1-1-chome, Kiyokawa-cho, Nakagawa-ku, Nagoyo, Japan

Filed June 28, 1973, Ser. No. 374,579
Int. Cl. B66f *3/12*
U.S. Cl. 254—126 **10 Claims**



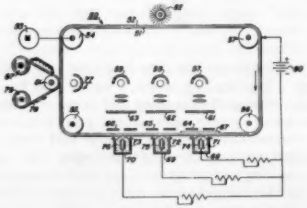
1. A pantograph-type jack comprising a plurality of upper jack arm assemblies each of which comprises a pair of opposite jack arms having opposingly engaged inner toothed ends pivoted to a movable support member; a plurality of lower jack arm assemblies each of which includes a pair of opposite jack arms having the opposingly engaged inner toothed ends pivoted to a stationary base member; spaced movable support blocks for pivotally supporting the outer ends of said jack arms of said plurality of upper and lower jack arm assemblies, one of said supporting blocks having a center coarsely threaded bore, the other of said support blocks having a plain bore; a first operation rod having a coarsely threaded outer surface in threaded engagement in said one support block; a sleeve having one end portion for fixedly receiving an adjacent inner end of said first operation rod and an other end portion of said sleeve having a finely threaded inner surface; and a second operation rod having a finely threaded outer surface portion in threaded in engagement with said inner threaded surface of the other end portion of the sleeve, said second operation rod further having a plain surface portion received in said plain bore of the other block.

3,857,549

PHOTOELECTROPHORETIC IMAGING APPARATUS

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 144,215, May 17, 1971, , which is a continuation of Ser. No. 707,871, Feb. 23, 1968, abandoned. This application Jan. 26, 1973, Ser. No. 326,939
Int. Cl. G03b *15/00*
U.S. Cl. 355—3 P **2 Claims**



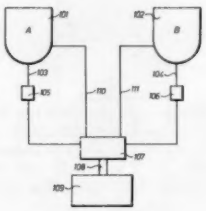
1. A photoelectrophoretic imaging apparatus comprising in combination; an optically transparent electrode, means for presenting a photoelectrophoretic imaging suspension to said transparent electrode, said means comprising at least one container and spaced apart from said electrode, means to selectively deform the surface of a photoelectrophoretic imaging suspension so as to cause it to contact the imaging surface of said electrode, said means comprising at least one coronode positioned in said container, said coronode being spaced apart from and in electrical contact with said electrode, and means for projecting an image onto said electrode at the station where said electrode is selectively contacted by said imaging suspension opposite said coronode.

3,857,550

MACHINE FOR PRODUCING FOAMS, HOMOGENEOUS OR STRUCTURAL MATERIALS FROM AT LEAST TWO LIQUID REACTION COMPONENTS

Ulrich Knipp, Schildgen; Heinrich Boden, Opladen; Heinrich Ersfeld, Bergisch-Neukirchen; Walter Schneider, Bensberg, and Reiner Moeres, Siegburg, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 12, 1973, Ser. No. 350,675
Claims priority, application Germany, Apr. 20, 1972, 2219389
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **15 Claims**



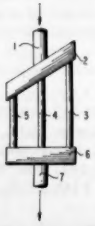
1. An apparatus for mixing at least two liquid reaction components, and molding the resulting reaction product comprising a storage container for each reaction component, delivery pipes which lead from each storage container to a mixer comprising a mixing chamber, a slide valve being arranged at the end of each delivery pipe, the slide valves being coupled with one another for movement, wherein each slide valve comprises an injection opening and is arranged in a cut-out in opposite walls of the mixing chamber, so that part of the wall surface of the slide valve forms the wall of the mixing chamber and the injection openings may be aligned with the cut-outs.

3,857,551

DEVICE TO DAMPEN FLUCTUATIONS IN THE CONCENTRATION OF A SUBSTANCE IN A FLOWING STREAM OF FLUID

Joseph C. Troy, Pittsburgh, Pa., assignor to NUS Corporation, Rockville, Md.

Filed June 21, 1973, Ser. No. 372,366
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **4 Claims**



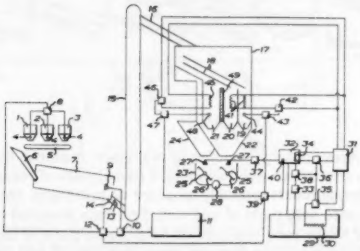
1. An apparatus for damping variable concentrations of a substance in a liquid stream, said apparatus comprising:

a triangular-shaped liquid container,
means for feeding said liquid stream into said liquid container including a first, inlet manifold located along the hypotenuse of said triangle,
means including said first inlet manifold for dividing said stream into a plurality of substreams, and
mean for collecting said substreams at a common point comprising a second, liquid outlet manifold located along one of the opposite sides of said triangle;
whereby, said substreams dividing at said first inlet manifold and being collected by said outlet manifold at said hypotenuse and said side opposite thereto, respectively, imparts time delays to each substream for arrival at said common point to provide a single liquid stream which has a substantially constant concentration of said substreams which is substantially lower than the peak or highest concentration of said substreams in said stream prior to treatment with said apparatus.

3,857,552
ASPHALT MIXING PLANTS FOR MAKING ASPHALT CONCRETE MIX

Karl Gunnar Ohlson, 28015 Finja Kyrkby, Sweden

Filed Mar. 27, 1973, Ser. No. 345,409
Claims priority, application Sweden, Mar. 28, 1972, 3988/72
Int. Cl. B28c 7/04
U.S. Cl. 259—156 **3 Claims**

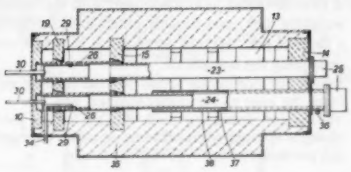


1. In an asphalt mixing plant for making asphalt concrete mix having mineral aggregate supplying and heating means, a mixer for receiving the heated mineral aggregate, and binder supplying means including heating means for introducing heated bitumen into the mixer, the improvement comprising viscosity sensing means for sensing the viscosity of the heated binder, binder temperature regulating means for controlling the heating means of the binder supplying means, said binder temperature regulating means being operatively connected to said viscosity sensing means for controlling the temperature of the binder in relation to the viscosity of the binder, binder temperature sensing means for sensing the temperature of the binder in the binder supplying means, and aggregate temperature regulating means for the mineral aggregate supplying and heating means, said aggregate temperature regulating means being connected to said binder temperature sensing means for controlling the temperature of the mineral aggregate in relation to the temperature of the binder.

3,857,553
HEAT TREATMENT FURNACE AND METHOD

Philip John Griffiths, Sutton Coldfield, England, assignor to Actric Limited, Bromwich, Staffordshire, England

Filed Oct. 24, 1972, Ser. No. 300,356
Claims priority, application Great Britain, Oct. 27, 1971, 49856/71
Int. Cl. C21d 9/00
U.S. Cl. 266—5 R **7 Claims**

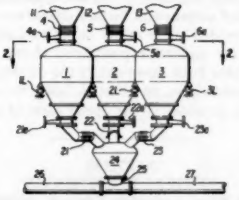


1. In a furnace of the kind used for heat treatment of workpieces and comprising an entry through which the workpieces enter the furnace, an exit through which workpieces leave the furnace and a treatment chamber through which the workpieces are conveyed between the entry and exit and in which the workpieces are heated to the required treatment temperature,
the improvement wherein the furnace comprises:
an ante-chamber adjacent to the treatment chamber and into which ante-chamber the furnace entry leads;
means defining an opening affording communication between the ante-chamber and the treatment chamber;
at least one heating tube disposed at least partly within the treatment chamber and communicating with the ante-chamber;
means for supplying fuel and air to the heating tube;
and a gas outlet leading out of the ante-chamber;
whereby fuel can be burned inside the heating tube to cause the tube to radiate heat to the contents of the treatment chamber, and the products of combustion pass from the heating tube into the ante-chamber and thence through the gas outlet.

3,857,554
STEEL CONVERSION

Frithjof Eichinger, Buxtehude, Germany, assignor to Claudius Peters AG, Hamburg, Germany

Filed Jan. 30, 1973, Ser. No. 328,110
Int. Cl. C21c 7/00
U.S. Cl. 266—34 T **4 Claims**



1. In a steel-converter system including a converter vessel having tuyers for the introduction of gases and loose-solid matter below the level of the molten metal in the converter by weighing and pressure-conveying said loose solids through the bottom of said converter, the improvement comprising:
a. a plurality of weighing tanks,
b. means for supplying different solid materials to different weighing tanks,

c. cycling means for cycling the filling and emptying said weighing tanks,
d. pressure-conveying means for receiving and pressure conveying different materials from said different weighing tanks at different intervals to said converter,
e. said cycling means including a valve at the inlet of each weighing tank and
f. a valve at the outlet of each weighing tank,
g. a flexible joint associated with the inlet of each weighing tank,
h. a flexible outlet joint associated with the outlet of each weighing tank, said flexible outlet joint including
i. a flexible duct section arranged at an angle closely approaching the horizontal,
j. means for conveying solids in said flexible outlet joint from the inlet to the outlet thereof, and
k. means for stabilizing each flexible outlet joint against changes in longitudinal dimension under changes of internal pressure.

3,857,555

OIL BUFFER

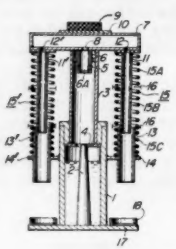
Akihiro Mori, and Norihiko Mitsui, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 26, 1973, Ser. No. 400,738

Claims priority, application Japan, Sept. 29, 1972, 47-96988

Int. Cl. B60g *11/56*

U.S. Cl. 267—34 **12 Claims**



1. An oil buffer in which a tapered control rod is provided in a cylinder fixedly erected on a base and an oil injection hole arranged to allow passage of said control rod is provided at the bottom of a plunger arranged slidable in said cylinder so that oil in said cylinder will be injected into said plunger through the space between said control rod and injection hole so as to produce a buffer action, and further characterized in that an oil check is provided at the inside top of said plunger, said oil check having the underside positioned above said injection hole so as to force back downwardly the oil which gushes out from said injection hole, and that air holes for ejecting air in the plunger are provided in the upper parts of said oil check.

3,857,556

VEHICLE SUSPENSIONS

Bernard Ridge Wing, Leicester, England, assignor to Dunlop Limited, London, England

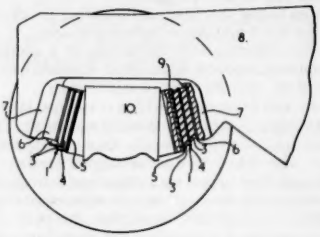
Filed Feb. 21, 1973, Ser. No. 334,201

Claims priority, application Great Britain, Feb. 26, 1972, 8964/72

Int. Cl. B60g *11/24*

U.S. Cl. 267—63 A **7 Claims**

1. A vehicle suspension comprising a spring of elastomeric material having means at one end for attachment to a vehicle, an end plate at the other end connected to a vehicle wheel bearing, means for limiting the rate of heat transfer between the bearing and the elastomeric material comprising a series



of projections between the end plate and the bearing to form a space for the air to pass therethrough.

3,857,557

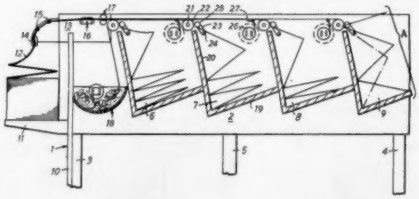
WEB HANDLING APPARATUS

Edward William Gill; Derek Arthur Vincent, and John Peace, all of Canning Town, England, assignors to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,546

Int. Cl. B65h *41/00*

U.S. Cl. 270—52.5 **5 Claims**



1. Apparatus for handling a multi-part manifold business forms continuous web including, a frame, pairs of repectively contacting rollers rotatably mounted on said frame and being associated with parts of said web, first trays mounted on said frame below each said pair of rollers, said parts of said web respectively passing between respective nips of said contacting rollers and into said first trays, and means on said frame for rewinding a portion of said web, said rewind means comprising a rotatable disc having a plurality of parallel elongated first members extending outwardly therefrom, and a plurality of parallel elongated second members removably mounted on said first members, whereby said portion of said web may be wound onto said second members upon rotation of said disc, and said wound portion may be removed from said first members along with said second members.

3,857,558

PAPER CASSETTE DESIGN WITH IRREGULAR BOTTOM

Sumant Patel, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

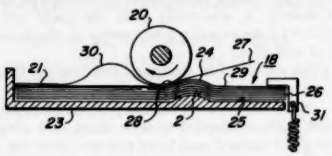
Filed June 21, 1973, Ser. No. 372,437

Int. Cl. B65h *3/06, 3/46*

U.S. Cl. 271—22 **10 Claims**

1. A sheet feeding apparatus comprising: support means for supporting a stack of sheet material on top thereof, said support means including at least one inclined surface for deforming said sheet material supported thereon to form a protuberance in the top most sheet, means coacting with said protuberance for elevating the leading edge of said top sheet as it is fed from said stack, said elevating means including feeding means

arranged to contact the top most sheet of said stack for feeding the top most sheet from said stack, said inclined surface



being positioned between the leading edge of said stack and said feeding means.

3,857,559

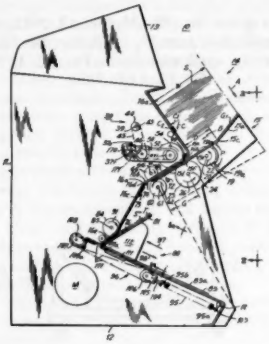
MECHANISM FOR FEEDING, SEPARATING AND STACKING SHEETS

George P. McInerny, Andalusia, Pa., assignor to Pennsylvania Research Associates, Inc., Philadelphia, Pa.

Division of Ser. No. 227,847, Feb. 22, 1972, Pat. No. 3,771,783. This application Mar. 26, 1973, Ser. No. 344,999

Int. Cl. B65h *3/52*

U.S. Cl. 271—122 **3 Claims**



1. Apparatus for accepting sheets received from an infeed location and delivering said sheets along a feed path one at a time in spaced sequential fashion to an outfeed location comprising

drive means having continuously rotating rollers having peripheries adapted to make sliding engagement with a sheet delivered thereto;

stripper means positioned adjacent said drive means for preventing more than one sheet at a time from being advanced by said drive means toward said outfeed location, said stripper means comprising:

a machine frame;

stripper support means;

a first shaft freely wheelingly mounted to said frame for pivotally mounting a first end of said support means;

a second shaft free wheelingly mounted to the second end of said support means;

a stripper roller for engaging said sheets being mounted on said second shaft;

each of said shafts having a pulley;

a third shaft free wheelingly mounted to said frame and having a drive pulley;

means for rotating said third shaft and said drive means;

first coupling means entrained between said drive pulley and said first shaft pulley;

second coupling means entrained about said first and second shaft pulleys whereby said first and second coupling means cooperate to couple rotational movement from said drive pulley to said second shaft stripper roller in a direction opposite that of the drive means rollers while permitting said support means to freely pivot about said first shaft completely independent of said rotational driving function.

3,857,560

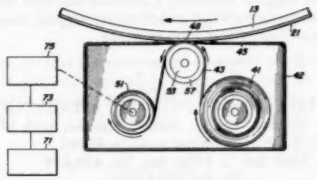
ADHESIVE PAPER PICK-OFF SYSTEM

Robert William Gundlach, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 23, 1973, Ser. No. 381,933

Int. Cl. B65h *29/54*

U.S. Cl. 271—174 **15 Claims**



1. An apparatus for stripping a sheet adherent to a surface, comprising:

a member having an opening;

an adhesive tape;

a mesh of a plurality of non-sticky wires positioned in the opening and forming a grid screen thin enough to allow contact of the adhesive tape to the sheet through the openings of said mesh but strong enough to prevent the paper from deforming into the openings;

means for positioning the adhesive tape against said grid mesh for pressure contacting the sticky side of the adhesive tape to the sheet through the grid.

3,857,561

GYMNASTIC APPARATUS

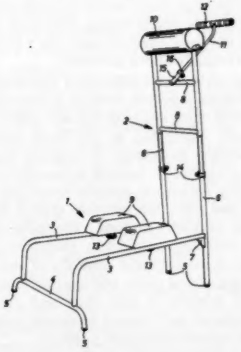
Giancarlo Cecchettini, Schleissheimer Strasse 110, D-8000 Munich 40, Germany, and Antonio Paludetti, Vittorio Veneto, Italy, assignors to said Cecchettini, by said Paludetti

Filed June 27, 1973, Ser. No. 374,238

Claims priority, application Germany, Nov. 2, 1972, 2253767

Int. Cl. A63b *1/00, 3/00*

U.S. Cl. 272—58 **43 Claims**



1. A gymnastic apparatus for accommodating exercises by

a person with selective alternative positioning of the person's head; said apparatus comprising:

substantially horizontally extending bar means,

shoulder support means mounted on said bar means for supporting shoulders of said person,

an upright frame connected to said bar means,

knee support means disposed adjacent an upper end of said upright frame for supporting bends of knees of said person,

cantilever means connected to said upright frame,

and feet support means mounted in spaced relation from said knee support means by said cantilever means for supporting the feet of said person,

wherein said upright frame is inclined at an angle with respect to said bar means such that the knee support means are spaced in the horizontal direction from said shoulder support means by a distance less than the horizontal distance between said shoulder support means and lower portions of said upright frame.

3,857,562

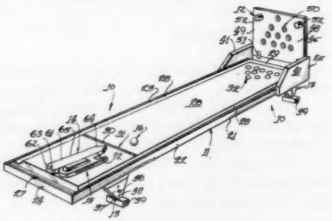
MINIATURE BOWLING GAME APPARATUS

Edward H. Rardon, and E. Jeffrey Rardon, both of 2646 McVey Blvd., W., Worthington, Ohio 43085

Filed Jan. 3, 1974, Ser. No. 430,479

Int. Cl. A63d *3/02*

U.S. Cl. 273—38 **4 Claims**



1. A miniature bowling game apparatus comprising:

a playing board having a substantially flat rectangularly shaped bottom surface, a top surface defining a playing field in the form of a bowling alley, opposed longitudinally extending vertically disposed side edges, and opposed end edges defining a playing end and a bowling pin end respectively;

a back-stop associated with said bowling pin end of said alley and comprising a pair of transversely spaced apart side wall surfaces each associated with a respective side edge of said playing board and projecting vertically thereabove, and a vertically extending back wall surface interconnecting the back edges of said side wall surfaces and extending vertically above the alley;

a pin resetting plate of a substantially flat rectangular configuration having a bottom surface, a top surface, a front edge, a bottom edge, and opposed side edges, said bottom edge hingedly connected to said back wall surface to provide swinging movement of said pin resetting plate between a substantially vertical inoperative position and a substantially horizontal position overlying the bowling pin end of said alley, ten separate spaced apart bowling pin receiving apertures forming a triangular shape on said plate and extending completely therethrough with the apex of said shape disposed centrally of and inwardly of the front edge of said plate, and spacing means affixed to said bottom surface of said plate and projecting outwardly therefrom and adapted to engage said alley when said plate is in said horizontal position;

a guide arm of an elongated configuration having a back end, a front end, and at least one substantially straight side edge, said guide arm pivotally attached by a pivot pin to the top surface of said alley on said playing end thereof in a manner providing swinging movement of said guide arm in a horizontal plane about the surface of said alley in a manner to selectively point the guide arm in the direction of the bowling pins resting on the bowling pin end of said alley;

a ball guide device of an elongated substantially flat configuration having a flat bottom surface, a back end, a front end, and at least one substantially straight side edge, said bottom surface adapted to slide along said alley at the playing end thereof, said front end provided with a longitudinally inwardly projecting slot centrally thereof, said straight edge adapted to be placed in sliding juxtaposition with said straight edge of said guide arm for guiding the movement of said guide device therealong; and

a bowling ball of a size and configuration adapted to be freely received in said guide device slot for guiding movement therein in a manner providing initial direction and velocity to said ball as said guiding device is slid along said guiding arm to propell the ball down the alley into the bowling pins.

3,857,563

DEVICE FOR PRACTICING GYMNASTICS

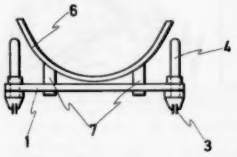
Isidro Gimenez Azara, Avenida Bruselas 42, Madrid (2), Spain

Continuation of Ser. No. 198,131, Nov. 12, 1971, abandoned. This application June 15, 1973, Ser. No. 370,454

Claims priority, application Spain, Dec. 12, 1970, 164193

Int. Cl. A63b *2/00*

U.S. Cl. 272—58 **1 Claim**



1. A device for practicing gymnastics, said device comprising:

a horizontally positioned rectangular platform having opposite parallel edges;

two supports parallelly attached to the underside of said platform adjacent two of said opposite parallel edges thereof, said supports extending along the entire lengths of said two opposite parallel edges;

rollers mounted on opposite ends of each of said two supports; and

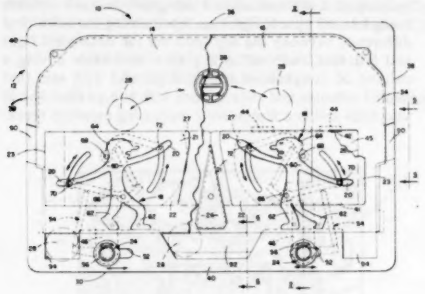
two parallelly mounted gripping handles attached to the upper side of said platform, each of said handles comprising an arched bridge having a straight horizontal central portion and vertically extending free ends, said handles extending along substantially the entire length of said two opposite parallel edges, each of said handles being attached to said platform with the central portion thereof extending above and parallel with one of said supports, said free ends of each of said handles extending through said platform and the corresponding support positioned thereunder.

3,857,564

DISC PROJECTION APPARATUS

Adolph E. Goldfarb, 4614 Monarea Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316

Filed Feb. 21, 1973, Ser. No. 334,382
Int. Cl. A63b 71/02
U.S. Cl. 273—85 F **15 Claims**



1. Play apparatus for competitive play between two or more players, comprising:

a housing having a transparent window and defining a compartment therein, said compartment having a generally flat configuration defining a generally upright plane of reference, said compartment having a width generally transverse to said generally upright plane of reference,

a pair of figures disposed within said compartment, each of said figures having at least one movable limb, said figures being disposed parallel to said plane for translational movement parallel to said plane,

a barrier region disposed in a lower portion of the compartment between the figures and extending substantially the full width of the compartment, said barrier region comprising a solid barrier member disposed in said lower portion of the compartment and extending sufficiently far along said width of the compartment to block passage of said playpiece through said barrier region,

a playpiece within said compartment for being propelled by said figures back and forth between them and over the barrier region, and

remote control means in said housing operatively associated with said figures so that each figure can be separately and individually controlled in its movement from outside of said housing.

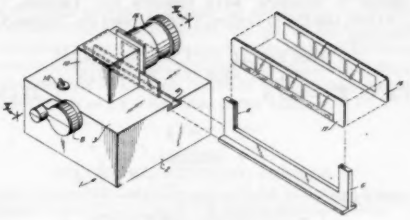
3,857,565

STOP-ACTION SPORTS GAME

Sol Friedman, 10 Ronald Dr., Monsey, N.Y. 10950

Filed Sept. 17, 1973, Ser. No. 397,636
Int. Cl. A63f 7/06
U.S. Cl. 273—85 R **12 Claims**

1. Stop-action sports game, comprising a set of first transparencies each having a plurality of frames which show images of at least one offensive player in different offensive playing situations, some of said first frames being provided with one or more indicia indicative of respective playing results; a set of second transparencies each having a corresponding plurality of second frames which show images of at least one defensive player in different defensive playing situations, each of said second frames being provided with an opaque area having a window large enough to show at least one indicium of a first frame which is overlies; means for holding any two first and second transparencies in overlying relationship in which said first frame thereof is in registry with a second frame thereof and forms a projectable composite having a composite image formed by the individual images of the overlying first and second frames of the composite; means for projecting the composite images of the respective composites individually and sequentially onto a surface; and means for selectively covering different portions of each window prior to such



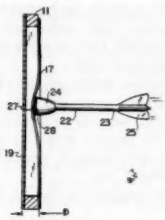
projection, so that the remaining uncovered portion of each window is just large enough to show only such an indicium which may be present on the exposed portion of the associated first frame.

3,857,566

ADHESIVE SURFACE DART AND SHOCK ABSORBING TARGET

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840, and Allan M. Elfman, 219 E. 83rd St., New York, N.Y. 10028

Filed Jan. 24, 1974, Ser. No. 436,045
Int. Cl. A63b 71/02
U.S. Cl. 273—95 R **5 Claims**



1. A target game comprising:

a missile having at least a portion of its surface defined by a multitude of irregular filamentary formations,

a target adapted to be secured adjacent an upstanding support such as a vertical wall and composed of an assembly including a support,

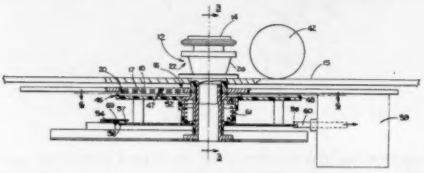
a sheet of pile textile material having a central target portion and border portions supported by said support and being composed of upstanding hook-like filamentary formations which are adapted to be engaged and retained by the irregular filamentary formations of said missile when said missile is directed at said target and to removably retain said missile thereagainst in the area of impact, said central portion of said sheet of textile material being normally disposed by said support away from the wall against which said target is supported and being deflectable inwardly towards said wall when struck by a missile so as to yield during the deceleration of said missile to permit the filamentary hook-like formations of said target and the irregular formations of said missile to engage and become interlocked in a manner such as to retain the two in assembly so as to indicate the location of the portion of the target struck by said missile.

3,857,567

BUMPER POOL GAME WITH IMPACT RESPONSIVE ACTUATION-DEACTUATION STRUCTURE FOR MARKING AND UNMARKING OF SELECTED BUMPER ELEMENTS

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316

Filed Feb. 21, 1973, Ser. No. 334,221
Int. Cl. A63f 7/00; H01h 3/16
U.S. Cl. 273—123 A 21 Claims



1. Bumper pool game apparatus comprising:
a rollable striking element;
a substantially horizontal playing surface for the striking element to roll upon, the playing surface having a periphery;
wall means disposed at the periphery of the playing surface and comprising a boundary therefor to confine the striking element, the wall means being configured to provide access to the playing surface from above the surface for permitting play thereon;
a plurality of bumper means for being struck by the striking element, the bumper means being disposed in an arrangement at the playing surface and extending thereabove;
marker means on the bumper means, the marker means being actuable to mark the bumper means to distinguish the latter means from unmarked bumper means and thereby indicate the next bumper means to be struck by the striking element; and
control and selection means coupled to the bumper means and to the marker means, and being responsive to impact of the striking element upon a marked bumper means to:
a. deactuate the marker means of that bumper means,
b. select the next bumper means to be struck by the striking element, and
c. actuate the marker means on the selected bumper means.

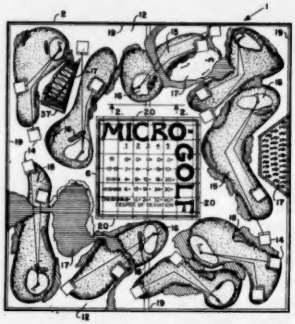
3,857,568

SIMULATED GOLF BOARD GAME APPARATUS

Donald E. Yoder, 9519 Melrose, Apt. 3, Overland Park, Kans. 66214

Filed Dec. 3, 1973, Ser. No. 421,477
Int. Cl. A63f 3/00
U.S. Cl. 273—134 CG 6 Claims

1. A game device in which the game of golf can be simulated, said game device comprising:
a. a game board having a simulated golf course depicted thereon, the golf course including areas simulating a plurality of tees, fairways, greens, hazards, in-the-rough areas, and boundary lines for the fairways and the course;
b. a plurality of game tokens each representing a golf ball for a respective player;
c. chance means for manipulation by a player for randomly signifying travel of a respective golf ball, said chance means signifying distance of travel and degrees of deviation of travel from an intended path of travel, said chance means comprising:
1. a throwing cup and a plurality of dice from which any number may be selected and placed in and thrown from said cup, each player being permitted to select the number of dice for each throw, the total number of top spots of said dice when thrown signifying the distance of travel; and
2. a grid layout on said game board to receive said selected number of dice thrown from said cup, said grid layout having a table thereon with a plurality of parallel columns each having a plurality of designations representing degrees of deviation of travel from an intended path, said designations in said columns being arranged in longitudinally spaced lines of aligned designations, each column being headed by a designation representing the numerical difference between the top spots on the outermost right and left dice as faced by a player, said table having a column of designations arranged parallel with said first named columns and each aligned with a respective one of said lines and in consecutively increasing numbers repre-



senting numbers of dice thrown onto said grid layout whereby the numerical difference between the top spots on the outermost right and left dice as faced by a player and the number of dice thrown cooperate to determine one designation representing degrees of deviation of travel from the intended path; and
d. means to be placed on said game board for designating the intended path of travel and for measuring the actual distance and degrees of deviation of travel for each manipulation of said chance means to determine the lie of the game token representing the respective golf ball.

5. A measuring device for use in a simulated game, said measuring device comprising:
a. a first tool having an elongated portion with one end thereof adapted to be positioned at a selected location on a game board and having a V-notch therein adapted to receive and be in engagement with a stem of a game token at the selected location, said first tool being pivotal about the stem of the game token at the selected location to designate an intended path of travel of a game ball, the elongated portion of said first tool having one edge alignable with the center of the game token whereby the one edge is alignable with the intended path of travel of the game ball;
b. an arcuate end member on the other end of said elongated portion of said first tool and having indicia thereon designating degrees of deviation from the intended path of travel of the game ball, said indicia extending circumferentially right and left from the one edge of the elongated portion of said first tool, said indicia having zero deviation aligned with the one edge of the elongated portion of said first tool;
c. an elongated second tool pivotally mounted on said first tool for pivotal movement relative to the selected location, said second tool having one edge alignable with the one edge of the elongated portion of said first tool and with the stem of the game token at the selected location, the movement of said second tool being along said end member to designate direction of travel of the game ball;

and

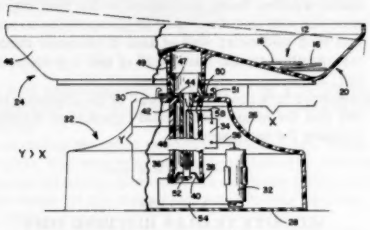
d. indicia on said second tool to designate distance of travel of the game ball along a determined path.

3,857,569

DEXTERITY GAME WITH INDICIA BOARDS AND PLAY PIECES MATCHING THE INDICIA

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316

Filed Feb. 21, 1973, Ser. No. 334,219
Int. Cl. A63f *3/06*
U.S. Cl. 273—135 A **10 Claims**



1. Competitive play apparatus for play of a game by two or more players, comprising in combination:

a plurality of play pieces having different indicia thereon,

a plurality of board surfaces each board surface assigned to one player, said board surfaces having indicia thereon matching the indicia on said play pieces,

a sensitively supported receptacle means for receiving said play pieces therein and for retaining said play pieces so that a player may selectively remove a play piece having an indicium thereon matching an indicium on said player's board surface, and

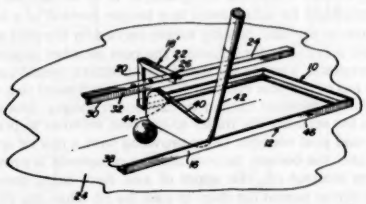
a base having signal means for providing a signal when actuated and means supporting said receptacle means in a said sensitively supported manner so that if said receptacle means is inadvertently engaged by a player when he attempts to remove a play piece from the receptacle means, said receptacle means will be moved relative to said base to actuate said signal means.

3,857,570

GOLF PUTTING TRAINING DEVICE

Miramon Gutierrez, 415 Fifth, Albuquerque, N. Mex. 87101, and Ricardo Gutierrez, 1600 Girard S.W., Albuquerque, N. Mex. 87106

Filed Apr. 24, 1974, Ser. No. 463,811
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 C **7 Claims**



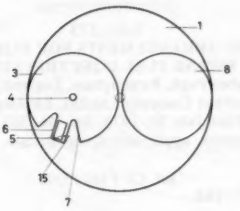
1. A golf putting practice device comprising a horizontal frame including a pair of parallel elongated opposite side members interconnected at one pair of corresponding ends by means of a transverse member extending and connected therebetween, an elongated guide bar supported from said frame in elevated position relative thereto with said guide bar generally paralleling said side members and disposed in a vertical plane spaced centrally intermediate said side members, the space between said guide bar and at least one of said side members being unobstructed, the spacing between said side members being slightly greater than the length of the head of a conventional putter and the height of said guide bar above the undersurface of said side members being slightly greater than the height of a conventional putter head.

3,857,571

RECORD REPRODUCING METHOD

Hiroshi Yamamoto, Tokyo, Japan assignor to Synaps, Tokyo, Japan

Filed Nov. 2, 1972, Ser. No. 303,214
Claims priority, application Japan, Nov. 6, 1971, 46-88388
Int. Cl. G11b *3/40, 25/04*
U.S. Cl. 274—9 C **1 Claim**



1. An apparatus for reproducing recorded information from a phonograph record having a spiral groove, comprising a turntable, a pickup disc rotatably mounted on one side of said turntable, a balancing means fixed on one side of said turntable opposite to said arm disc to maintain the turntable in equilibrium, a cartridge mounted on a peripheral portion of said pickup disc, said pickup disc having two cut out sections in the vicinity of the cartridge to offset the weight of said cartridge thereby maintaining said pickup disc in equilibrium, an upwardly pointed reproducing stylus provided on said cartridge, and a record support means positioned above said turntable whereby a phonograph record having visual information on an upper side thereof and a record groove on a lower side thereof may be placed with its upper side up and remain stationary while the reproducing stylus pointed upwardly to contact the record groove travels along the groove with rotation of the cartridge.

3,857,572

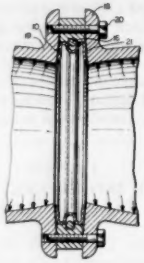
E-RING SEAL ASSEMBLY

Dudley D. Taylor, Beltsville, and Horace P. Halling, Laurel, both of Md., assignors to Pressure Science, Inc., Beltsville, Md.

Filed Oct. 18, 1973, Ser. No. 407,653
Int. Cl. F16j *15/00*
U.S. Cl. 277—9.5 **7 Claims**

1. A sealing ring assembly comprising a spacer plate and at least one resilient metal sealing ring approximately E-shaped in radial cross section secured inside an aperture in said spacer plate, the outer arms of said E-sealing ring having a sinuous configuration, the central arm of said E-sealing ring being a loop open on the outer edge thereof and having at least a portion of its two sides out of contact with each other, the portion of said spacer plate defining said aperture encircling said E-sealing ring and having an annular groove on the inner surface thereof, said groove being aligned with the opening of the loop on the central arm of said E-sealing ring, another ring

encircling said E-sealing ring and being situated so that a portion thereof extends into said annular groove and another



portion thereof extends into the opening in the central arm of said E-sealing ring.

3,857,573

MOUNTING ARRANGEMENTS FOR INJECTORS FOR I.C. ENGINE FUEL INJECTION SYSTEMS

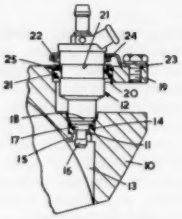
Michael Stephen Pugh, Birmingham, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed July 30, 1973, Ser. No. 383,607

Claims priority, application Great Britain, July 28, 1972, 36361/72

Int. Cl. F16j *15/06*

U.S. Cl. 277—102 **5 Claims**



1. A mounting arrangement for an injector on an engine intake manifold, said mounting arrangement comprising a sealing ring in a bore in said manifold, an abutment mounted on said manifold and a spring acting between said abutment and said injector through the intermediary of a flexible means so as to urge said injector into sealing engagement with said sealing ring.

3,857,574

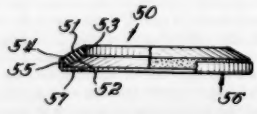
GASKET ASSEMBLY

Paul J. Artzer, Arvada, Colo., assignor to Appleton Electric Company, Chicago, Ill.

Filed Oct. 10, 1973, Ser. No. 405,149

Int. Cl. F16j *15/12*

U.S. Cl. 277—183 **3 Claims**



1. In the combination of electrical fitting means and a gasket between said fitting means, the improvement wherein said gasket comprises:

an annular, elastomeric member having parallel upper and lower walls, said walls being in the shape of a frustum of a cone, said walls being joined by inner and outer walls, said inner and outer walls being cylindrical in configuration with the inner wall having a smaller radius than that of the outer wall, said inner and outer walls having a common height;

a cup-shaped member having a generally flat annular base with an annular flange about the periphery of the base and at right angles to said base, said flange having an inside wall with a height above said base less than said common height, said cup-shaped member being relatively rigid compared to said elastomeric member, said elastomeric member being positioned within said cup-shaped member with said lower wall in juxtaposition to said base and with said outer wall of said elastomeric member in juxtaposition to said inside wall of said cup-shaped member; and

an adhesive between the outer wall of the elastomeric member and the inside wall of said cup-shaped member and bonding the two together.

3,857,575

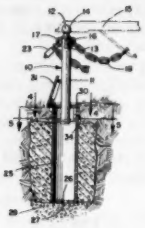
SECURITY TRAILER HITCHING POST

James F. Lee, Rt. 4, Box 363, Darlington, S.C. 29532

Filed Dec. 28, 1973, Ser. No. 429,108

Int. Cl. B60r *27/00*

U.S. Cl. 280—1 **9 Claims**

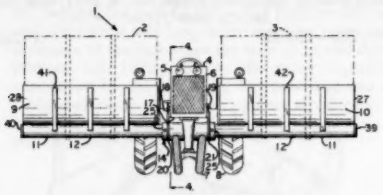


1. A telescoping hitching post assembly device comprising a fixed ground receptacle, a post member adapted to be completely housed within the receptacle or to be withdrawn from the receptacle for attachment to a tongue portion of a trailer for boats or the like, coating means carried by the post member and receptacle for retaining the post member secured to the receptacle when in the withdrawn position, means carried at the top of the post member for ready attachment to a complementary member carried by the trailer tongue, and other means for securing the trailer to the post member to prevent theft, said post member being provided with a pair of spaced discs near the bottom thereof and the receptacle is provided with an internal rib, the upper of said discs being provided with a slot to permit the discs to pass the rib when the rib and slot are in alignment, and the lower of said discs being adapted to engage the rib to prevent complete removal of the post member from the receptacle when the post member is in raised position, said discs and rib comprising said coacting means.

3,857,576
TANK MOUNTING STRUCTURE

Theodore G. Wilt, c/o T. G. Wilt Farm Employment, Box 397, Shelbina, Mo. 63468

Filed Mar. 18, 1974, Ser. No. 452,423
Int. Cl. B60p 3/22
U.S. Cl. 280—5 A 12 Claims



1. A tank mounting structure for use with a tractor having a longitudinally extending frame, said tank mounting structure comprising:

a. a mounting assembly removably attached to a frame of a tractor, said mounting assembly including a plurality of spaced mounting members each extending transversely of the frame of the tractor and each having opposite end portions;

b. a first and second tank support frame each adapted to be positioned on a respective side of the frame of the tractor and each having a plurality of elongated support members extending outwardly therefrom and each in removably supported engagement with a respective one of said mounting members of said mounting assembly;

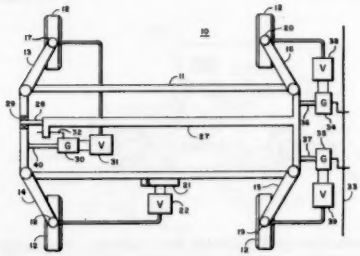
c. an elongated transversely arcuate cradle member for each of said first and second tank support frames, each cradle member being secured to said respective tank support frame and adapted to receive a respective tank therein; and

d. fastening means engaging each of said elongated support members of each of said first and second tank support frames and respective mounting members of said mounting assembly for retaining said first and second tank support frames in supported engagement with said mounting assembly.

3,857,577
PROPORTIONAL FRAME TWIST SLOPE CONTROL

Leland Kuntz, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 28, 1973, Ser. No. 401,927
Int. Cl. B60g 17/04
U.S. Cl. 280—6.1 8 Claims



1. A control system for an earth working machine having earth-support means and a frame having a front end and a rear end and power means for adjusting the grade and slope of the frame relative to said support means, said system comprising:

slope sensing means for providing an output dependent upon the deviation of the actual slope across one of said ends from a predetermined setpoint;

first connecting means adapted to connect said output to said power means for controlling the slope of said one end;

frame twist sensing means for providing a twist output proportional to the deviation of the actual slope across the other of said ends of said frame from the actual slope across said one end;

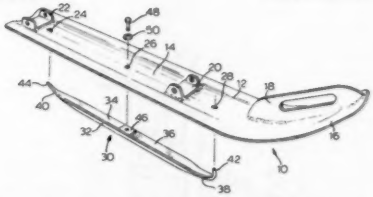
control means for receiving said twist output and for providing a control output proportional to the deviation of said twist output from a predetermined setpoint; and,

second connecting means adapted to connect said control output to said power means for controlling the slope across said other end of said frame.

3,857,578
WEAR BAR FOR A SNOWMOBILE SKI

James Gowan Alton, Willowdale, Ontario, Canada, assignor to James G. Alton Equipment Co., Limited

Filed Mar. 4, 1974, Ser. No. 447,750
Int. Cl. B62b 17/02
U.S. Cl. 280—28 10 Claims

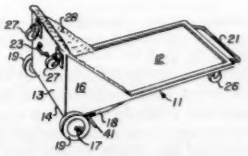


1. A wear bar for a snowmobile ski comprising two opposing steel sides which are downwardly depending and which meet to form an integral joint longitudinally of said wear bar, said joint having at least one longitudinal edge for contacting a ground surface which supports said snowmobile ski; said wear bar being adapted to correspond with the contour of the underside of said snowmobile ski where fastening means for securing said wear bar to the underside of said snowmobile ski is positioned in a depression defined between said opposing sides, the longitudinal axis of each said edge being parallel to the longitudinal axis of said snowmobile ski.

3,857,579
CART FOR MOVING TELEVISION, HI-FI CABINETS AND THE LIKE

James A. Hoodenpyle, 910 Pershing Ave., San Jose, Calif. 95126

Filed Apr. 6, 1973, Ser. No. 348,677
Int. Cl. B62b 1/08
U.S. Cl. 280—47.2 4 Claims



1. A cart having a longer end, a shorter end at right angles to said longer end joined at a transverse corner, triangular sides permanently fixed to said ends on each side of said dolly extending from the outer end of said shorter end across said

transverse corner, said sides holding said ends in said right-angle relation to each other and also preventing objects on said cart from falling off the sides, said ends and said sides comprising flat, thin sheets of material, said sheets being substantially impervious throughout most of their areas, an axle adjacent said corner, wheels on the ends of said axle, a first pair of casters on the back of said longer end adjacent the outer end of said longer end, a second pair of casters on the back of said shorter end adjacent the outer end of said shorter end, at least one first handle on the back of said longer end inward of said first pair of casters, at least one first handle on the back of said shorter end inward of said second pair of casters, and a U-shaped second handle fixed to and projecting outward beyond the outer end of said longer end.

3,857,580

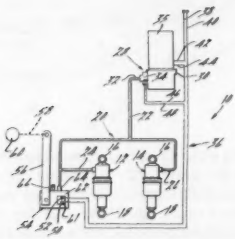
VEHICLE LEVELING SYSTEM

Johan H. Keijzer; J. Hans Van Den Berg; Willy R. J. Pierle, all of Tienen, and Louis Joseph Jossa, St. Truiden, all of Belgium, assignors to Monroe Belgium, N.V., St. Truiden, Belgium

Continuation of Ser. No. 217,016, Jan. 11, 1972, abandoned. This application Dec. 20, 1973, Ser. No. 426,470

Int. Cl. B60g *17/06*

U.S. Cl. 280—124 F **33 Claims**



1. A leveling system for a vehicle having sprung and unsprung portions,

at least one air pressure operated leveling strut for varying the attitude between the sprung and unsprung vehicle portions,

an electrically energized source of pressurized gas for supplying pressurized gas to said strut,

a pressurized gas circuit including a gas conduit directly connecting said source with said strut for directly communicating pressurized gas between said source and said strut,

an electrical circuit for communicating electrical energy to said compressor from a source thereof, and

a vehicle attitude sensing device responsive to variations in attitude between the sprung and unsprung portions of a vehicle,

said device including a valve communicable with said gas circuit and an electrical switch for opening and closing said electrical circuit, and

actuating means responsive to orientation of the sprung vehicle portion below some predetermined position for closing said valve and actuating said switch so as to energize said gas source and cause pressurized gas to be communicated from said gas source to said strut and thus expand said strut, and to orientation of said sprung vehicle portion above some predetermined position for opening said valve means and deactivating said switch, whereby a portion of said gas circuit is connected with a relatively lower pressure condition to permit said strut to collapse.

3,857,581

SAFETY BELT DEVICE FOR VEHICLES

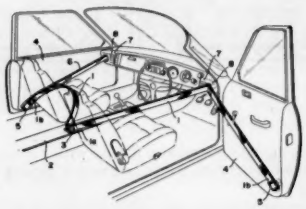
Yuichiro Kaneko; Fuminori Teraoka; Tatsushi Kubota, and Takehiko Nishikawa, all of Aichi, Japan, assignors to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho, Nishikasugai-gun, Japan

Filed Oct. 26, 1972, Ser. No. 300,976

Claims priority, application Japan, Nov. 4, 1971, 46-87869

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 SB **4 Claims**



1. A safety belt device for use in a vehicle including a door, which comprises a belt webbing having one end secured to a body of the vehicle on one side of a seat and the other end engaged to a winding means on the other side of the seat, said belt webbing extending across the seat in both first and second positions, said first position being an occupant restraining position when the door is closed and said second position being an occupant nonrestraining position when the door is open; an energy accumulator means for displacing said belt webbing to said second position; and a connecting means having one end bonded to said belt webbing and the other end engaged to said energy accumulator means, said energy accumulator means including a rod means having one end connected to the door of the vehicle and the other end connected to a first sector gear pivotally mounted on a first shaft, a second gear engaging with said first gear and fixed to a third gear in axial relationship to the latter; one-way clutch bodies mounted on said first gear for engaging with the third gear, and means energized by the winding of a spiral spring secured at one end to a second shaft by angular movement of said first gear through the rod means.

3,857,582

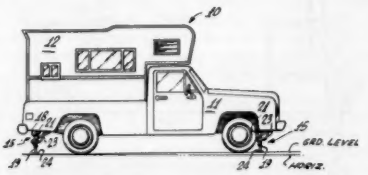
VEHICLE LEVELING SYSTEM

Michael Hartog, 650 N. Bronson Ave., Los Angeles, Calif. 90004

Filed May 17, 1974, Ser. No. 470,986

Int. Cl. B60s *9/02*

U.S. Cl. 280—150.5 **17 Claims**



1. A retractable jack assembly for a vehicle, comprising:

a longitudinally extendable and contractable jack having an upper end portion for attachment to the vehicle and an extendable lower end portion for engagement with the ground;

means on said upper end for mounting said jack on the vehicle including

a base,

a pivot defining a substantially horizontal axis for said jack supporting the latter on said base for swinging between an upright, active position and an upwardly folded, retracted position;

means guiding said pivot for back and forth movement along said base transversely of said axis; and

linkage means connected between said base and said jack for swinging the jack to said active position and shifting said pivot along said base in one direction in response to extension of the jack when the latter is in said retracted position, said linkage means also being responsive to contraction of said jack when the latter is in said active position to swing the jack back to the retracted position while shifting said pivot back along said base in the opposite direction.

3,857,583

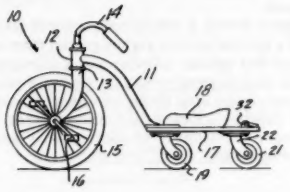
OCCUPANT PROPELLED QUADRACYCLE

Henry R. Vanover, 822 Highmoor St., Stockton, Calif. 95207

Filed May 18, 1973, Ser. No. 361,615

Int. Cl. B62k *9/00*

U.S. Cl. 280—282 **4 Claims**



1. A quadracycle comprising a frame, a steerable front wheel mounted in said frame, a generally horizontal plate secured to the rear of said frame, a pair of castering outrigger wheels supporting the opposed side edges of said plate, a rear wheel, means mounting said rear wheel on said plate for castering about a vertical pivot, and means movably mounted on said plate for latching said rear wheel against castering movement.

3,857,584

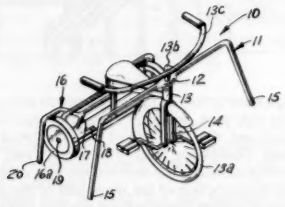
TRICYCLE ANTITIPPING DEVICE

Theodore J. Nohava, 1102 Jefferson St., and David C. Girsh, 940 N.E. 170 St., Apt. 104, both of North Miami Beach, Fla. 33020

Filed Sept. 10, 1973, Ser. No. 395,702

Int. Cl. B62h *7/00*

U.S. Cl. 280—293 **1 Claim**



1. A tricycle comprising a U-shaped tubular member with mounting means for placement over a front wheel of a tricycle, a rear tubular member carried by said tricycle providing excessive non-tipping means for a rear end of said tricycle, said tubular member having mounting means for a front end of said tricycle and including a central flange member which receives a goose-neck portion of a handle bar of said tricycle and which extends from a sleeve of a fork carrying a front wheel of said tricycle; opposite end portions of said tubular member being angled outwards on each side of said front wheel so as to provide stop means against a ground when said tricycle starts to tilt and said front U-shaped tube acting in conjunction with said rear tubular member to prevent said excessive tipping, said rear tube member having leg means secured fixedly to a rear portion over an axle carrying said rear wheels, said rear tubular member including outwardly extending and over hanging opposite ends, said over hanging ends extending over said rear wheels, said ends being angled downwardly outwardly and spaced apart from side faces of said rear wheels in order to provide stop means upon a ground when said tricycle starts in to a tilt.

3,857,585

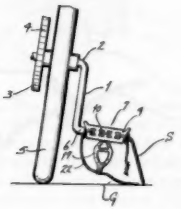
SUPPORT STAND FOR A RACER-TYPE BICYCLE

Edwin E. Foster, 1801 Camp Craft Rd., Austin, Tex. 78767

Filed Oct. 3, 1973, Ser. No. 403,168

Int. Cl. B62h *1/04*

U.S. Cl. 280—294 **6 Claims**



1. The combination with a racer-type bicycle pedal having normally front and rear parallel end plates, inner and outer parallel side plates, means inter-engaging said end plates and said side plates, a pedal axle extending transversely of said pedal in axially parallel relationship to said front and rear end plates, means rendering said pedal rotatable upon said pedal axle of a bicycle support stand, having a body with a normally upper portion presented to the outer face of said outer side plate between said normally front plate and said pedal axle, means engaging said body upper portion to said outer side plate, said stand body including a horizontal portion proximate its upper end for displacing said body laterally outwardly of said outer side plate, said body having forwardly and rearwardly projecting side portions, and a base portion, the distance between said body upper portion and said base portion being less than the distance between said pedal and the ground support surface when said pedal is in operative condition.

3,857,586

ANTI-JACKKNIFE DEVICE HITCH

Joseph J. Mascuch, 63 Sagammore Rd., Milburn, N.J. 07041

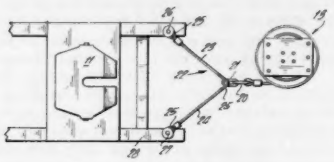
Filed June 11, 1973, Ser. No. 368,536

Int. Cl. B60d *7/00*

U.S. Cl. 280—432 **3 Claims**

1. An anti-jackknife device hitch for use with a tractor trailer rig having a braking device in the form of an axle mounted on one end of the elements of the rig, a brake stator secured to the free end of the axle, a complemental brake means freely carried upon the axle, a cable drum assembly rotatably mounted on the axle and coupled to the brake means and a cable secured at one end and received upon the cable

drum, the improvement which comprises a Y-shaped hitch secured at one end to the free end of the cable and at its other



two ends to spaced pivot points carried by the other member of the tractor trailer rig.

3,857,587

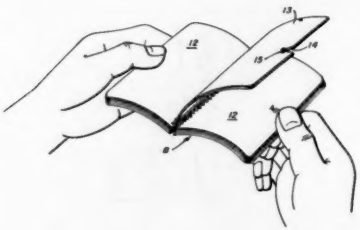
BOOK INDEXING MEANS

Arthur S. Friedman, 509 Madison Ave., Room 914, New York, N.Y. 10022

Filed July 19, 1973, Ser. No. 380,599

Int. Cl. B42f *21/00*

U.S. Cl. 283—42 **2 Claims**



1. In a book having its leaves constructed and arranged for progressive flexing in a thumbing operation and disposed as a sequential series of individual groups of consecutive leaves wherein the groups are separated by an indexing leaf immediately preceding the first leaf of each group and having therein a slit open to its outer side edge, each slit extending inwardly therein and making the area of that leaf adjacent the slit a pressure point more flexible under thumb pressure applied to that point than the remainder of the leaf, and all said indexing leaf slits being in a single plane common thereto and angled relative to the turning axis of the leaves.

3,857,588

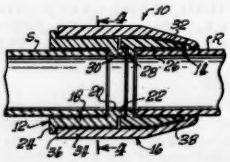
PIPE COUPLING

Hoyt S. Curtin, 104 Laramie Ave., Chatsworth, Calif. 91311

Filed Feb. 5, 1973, Ser. No. 329,727

Int. Cl. F16l *13/10, 47/00*

U.S. Cl. 285—31 **6 Claims**



1. A pipe coupling for first and second pipes of predetermined size, comprising:

a first end cap with a pipe portion that has an inside diameter slightly larger than the pipe diameter for adhesive mounting on the end of the first pipe, and with an inwardly-extending flange for abutting the end of the first pipe to determine the position of the cap thereon;

a sleeve slideable along its entire length along said second pipe and having a forward end with an inside diameter slightly larger than an outer diameter portion of the cap for sliding thereover, said sleeve having means for limiting sliding thereof towards said cap so that a rearward end portion of the sleeve extends rearwardly of the end cap and around said second pipe; and

a second end cap for adhesive mounting on an end of the second pipe opposite the first end cap, said second cap having an inwardly-extending flange for abutting the end of the second pipe to determine the position of the second cap thereon;

each of said caps having a short tubular portion extending beyond the flange thereof, with the tubular portion of one cap receivable in the tubular portion of the other;

said first end cap having a predetermined first outside diameter along most of its length, said second end cap having a forward portion of said predetermined first diameter and a rearward portion tapered to increasingly smaller outside diameters at increasingly rearward locations thereof;

said sleeve having a substantially smooth internal surface with a forward portion slightly greater than said predetermined first outside diameter and a rearward portion tapered complementary to said rearward portion of said second cap for axial sliding movement of said sleeve over said caps for adhesive securement thereto, said sleeve having a substantially smooth external surface free of securing means.

3,857,589

PIPE CONNECTION WITH CLAMPING RING

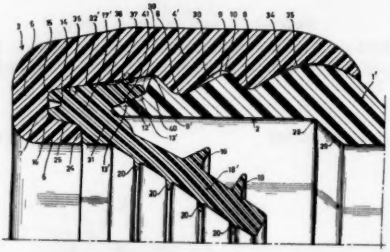
Albertus Anthony Oostenbrink, Hardenberg, Netherlands, assignor to Industriele Onderneming Wavin N.V., Handellaan, Zwolle, Netherlands

Filed Dec. 12, 1972, Ser. No. 314,359

Claims priority, application Netherlands, Dec. 14, 1971, 7117153

Int. Cl. F16l *17/00*

U.S. Cl. 285—110 **8 Claims**



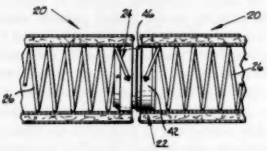
1. A pipe connection comprising a penetrating pipe part and a receiving pipe part, the latter being provided with a cylindrical widened end, the axial end of the cylindrical widened end cooperating clampingly with a retaining ring of generally J-shaped longitudinal cross-section, the part of the ring, which extends in the direction of the inner side of the receiving pipe part ending at a short distance from the free end of said receiving pipe part, the inner diameter of the retaining ring being substantially equal to the inner diameter of the receiving pipe part, and a sealing ring having a sealing body part clamped between the bottom of the retaining ring and the axial end of the receiving pipe part, said sealing ring further including a portion which is connected with the sealing body part and

which contacts at least partially the inner side of the widened end of the receiving pipe part and the outer side of the penetrating pipe part, wherein the sealing body only cooperates partially with the bottom of the retaining ring and cooperates resiliently with the axial end of the receiving pipe part, said pipe connection including means for absorbing shock as a result of impact thereto, said means for absorbing shock comprising the sealing body part, the retaining ring provided with hollows and elevations which cooperate with corresponding hollows and elevations provided on the radial outer surface of the receiving pipe part, such that when said retaining ring and receiving pipe part are coupled together spaces remain between engaging hollows and elevations to permit displacement of said retaining ring relative to said receiving pipe part thereby compressing said sealing body part without damaging said respective hollows and elevations when said pipe connection is subjected to impact by being dropped or the like.

3,857,590
AIR DUCT

Brian Lee Meeker, Toledo, Ohio, assignor to Johns-Manville Corporation, Greenwood Village, Arapahoe County, Colo.

Filed Jan. 17, 1973, Ser. No. 324,274
Int. Cl. F16l *37/00*
U.S. Cl. 285—305 **7 Claims**



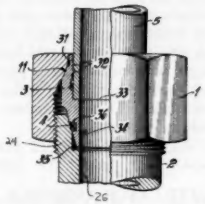
1. Flexible air duct comprising:
a. a tubular member, said tubular member having a first end portion and a second end portion,
b. a female ring, said female ring being affixed to said first end portion;
c. a male ring, said male ring being affixed to said second end portion, said male ring having an extended portion which extends beyond the second end portion and an inner portion which is within the second end portion, said extended portion having an outside diameter less than the internal diameter of the female ring whereby the extended portion is adapted to be inserted into a female ring of another of the ducts, and said extended portion having resilient tabs extending outward from an outer surface of said extended portion to define a diameter greater than the internal diameter of the female ring, and the spacing between the tabs and the juncture between the extended portion and the inner portion of the male ring being greater than the width of the female ring whereby the tabs are adapted to cooperate with an inner annular edge of the female ring of another of the ducts to prevent removal of the male ring from the female ring.

3,857,591
PIPE COUPLING

Hans Hermann Voss, Donrgaul uber Wipperfurth, Germany, assignor to Armaturenfabrik Hermann Voss, Wipperfurth/Rhld., Germany

Filed Dec. 8, 1972, Ser. No. 313,361
Claims priority, application Germany, Dec. 11, 1971, 7146704
Int. Cl. F16l *19/06*
U.S. Cl. 285—341 **3 Claims**

1. A pipe coupling comprising, in combination: two threadedly engageable coupling members (1, 2) one (2) of which is in the form of a body member and the other (1) is in the form of a nut member, including thread means for interengagement between said coupling members, thereby to connect sealingly a pipe section (5) to said body member, the pipe section having an axial passage for conveying a medium therethrough; sealing means (3, 4) between said coupling members and said pipe section, including a first metallic ring (3) interposed between said nut member and said pipe section and a second elastic sealing ring (4) in fluid-tight but resilient engagement with said body member and with said metallic ring; said nut member including an arcuate inner abutment surface (11) as a continuation of its thread means for tight metallic engagement with said metallic ring; the latter having an annular groove (36) for receiving therein said sealing ring; the surfaces of said metallic ring that are immediately adjacent said sealing ring on both sides of said groove providing additional tight metallic engagement with said body member; said metallic ring and said body member having respective axial passages (34, 26) therein substantially contiguous with said axial pas-



sages of the pipe section; wherein said metallic ring has a stepped axial bore (32, 33, 34) for receiving therein an end portion of the pipe section, including a first step region (34) with a smaller inner diameter that substantially corresponds to the diameter of said axial passage of the pipe section and a second axially spaced-apart step region (32) with a larger diameter that at least corresponds to the external diameter of the pipe section; the outer surface (35) of said first region conically tapering to the free end (24) of said body member; annular tooth means (32) on the inner wall portions of said second step region for tight radial engagement with outer wall portions of the pipe section when said nut member is tightened about said body member and said metallic ring; outer wall portions of said second step region being in the form of a frustoconical end portion (31) directed to said arcuate abutment surface of the nut member; and wherein said metallic ring has a radially inwardly drawn circularly shaped abutment surface (33) between said step regions, contiguous with said end portion of the pipe section.

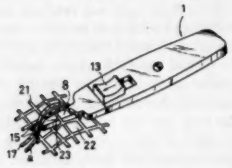
3,857,592
HANDICRAFT TOOL

Fuji Koike, 2006-143 Aza-Akane, Oaza Nonami, Nagoya, Japan

Filed Nov. 5, 1973, Ser. No. 412,974
Claims priority, application Japan, Nov. 8, 1972, 47-128801; Sept. 3, 1973, 47-103386
Int. Cl. D03j *3/00*
U.S. Cl. 289—17 **7 Claims**

1. A handicraft tool for forming a piled sheet article by knotting a plurality of cut loops of yarn one by one at the bent root portion thereof to each of filaments forming a plurality of meshes of a meshed sheet base, comprising an elongated hollow body member to be gripped, a thin sleeve connected with said body member at the forward end thereof so as to produce opposite shoulders at the body member forward end for holding a yarn cut loop with the bent root thereof abutting on the lower surface of said sleeve and with the legs of said loop each extending upwardly and abutting on each of said shoulders, said sleeve being of such diameter as allowing same to pass through each of said meshes, a reciprocatingly mov-

able member disposed in said body member so as to be manually moved relative thereto between the forwarded position and the retracted position, and the pair of resilient hook levers arranged in said sleeve extending over a length thereof, said hook levers having their inner ends connected together with said reciprocatingly movable member and the outer free ends



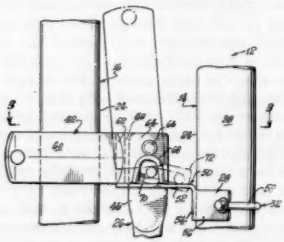
designed to be normally separated from each other to form an open hook slightly protruded out of said sleeve when said reciprocatingly movable member is in said forwarded position but forcingly engaged with each other to produce the closed hook against the elasticity due to being pulled into the sleeve when said reciprocatingly movable member is brought into said retracted position.

3,857,593

GATE LATCH ASSEMBLY

George O. Lening, 1867 S. Valencia, Rowland Heights, Calif. 91745

Filed May 30, 1973, Ser. No. 365,255
Int. Cl. E05c *5/02*
U.S. Cl. 292—5 **8 Claims**



1. A latch assembly for a hinged double gate structure including a pair of hinged gates swingable to and from closed positions wherein the gates are located substantially in a common plane with vertical edges of the gates adjacent one another comprising:

a normally generally vertical latch rod having a normally upper end,

mounting bracket means slidably receiving said rod including means for attaching said bracket means to said edge of one gate with said rod extending along the edge,

anti-rotation means for restraining said rod against rotation on its longitudinal axes relative to said bracket means,

a latch yoke including a pair of spaced yoke arms, a connecting portion joining said arms at one end, and a tongue extending from said connecting portion, and

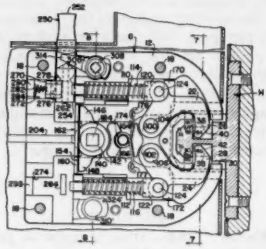
means pivotally connecting said yoke tongue to the upper end of said rod on a pivot axis transverse to the rod for swinging of the yoke between a gate latching position wherein said yoke arms extend transversely of the rod for straddling said edge of the other gate and gate releasing position wherein said yoke arms extend generally longitudinally of said rod.

3,857,594

DOOR LOCK ASSEMBLY

John V. Pastva, Jr., Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed Aug. 30, 1972, Ser. No. 285,044
Int. Cl. E05c *3/34*
U.S. Cl. 292—27 **17 Claims**



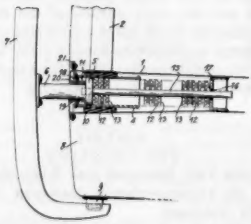
1. A lock assembly comprising: a multi-part housing having apertures, grooves and channels therein supporting operating parts; a pair of latch members in one of said cavities and pivoted to said housing about spaced parallel axes; said latch members having opposed jaw parts spring-biased towards one another projecting from said housing, said jaw parts having on one side of their distal ends surface portions converging toward one another and facing in the same direction axially of the pivot axes; a member slidably supported within said housing and operably connected to said latch members for moving said latch members about their pivoted connection to said housing in the direction to move said jaw parts away from one another; and a keeper member adapted to be engaged by said jaw parts, said keeper member having surface portions converging towards one another facing in one direction to be engaged by said converging surface portions of said jaw parts and aligned surface portions spaced from said converging surface portions and facing in the opposite direction.

3,857,595

SHOCK-ABSORBER FOR VEHICLES AND THE LIKE

Alain Edouard Plegat, Asnieres, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, France

Filed Aug. 27, 1973, Ser. No. 392,066
Claims priority, application France, Oct. 27, 1973, 72.38253
Int. Cl. B60r *19/02*; **B61f** *19/04*
U.S. Cl. 293—71 R **20 Claims**



1. A shock-absorber for absorbing shock to a vehicle body comprising:

a bumper;

a support for said bumper, said support being slidably mounted with respect to said vehicle body;

a pile of distortable elements interposed between said support and said vehicle body; and

resilient means urging said distortable elements one against the other and said slidable member against said vehicle body,

whereby said distortable elements are always in slight pressure relationship and said slidable support is maintained without any play with respect to the vehicle even though said distortable elements are in part at least distorted during a crush in absorbing the shock energy.

3,857,596

AUTOMOBILE BUMPER ASSEMBLY

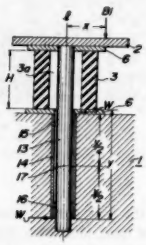
Kihei Nakamura, Yokohama; Harumichi Yamazaki; Kazuo Takeguchi, and Yoshikazu Kondo, all of Tokyo, Japan, assignors to Bridgestone Tire Company, Inc., Tokyo, Japan

Division of Ser. No. 260,331, June 6, 1972, abandoned. This application Dec. 27, 1973, Ser. No. 428,681

Claims priority, application Japan, Aug. 13, 1971, 46-60962

Int. Cl. B60r *19/06*

U.S. Cl. 293—88 **4 Claims**



1. An automobile bumper assembly, comprising an automobile body, a fender rod spaced from the automobile body, and a plurality of hollow tubular elastomer members disposed between said automobile body and said fender rod so as to cause the longitudinal central axis of each of said tubular elastomer members to extend from said body to said fender rod, each said elastomer member consisting of an elastomeric material with a Shore A hardness of 63° to 104° and a cross sectional area ratio (S_1/S_2) of 1.44 to 4.0, S_1 being a cross sectional area of the elastomer member taken at right angles to the axial center line thereof and S_2 being a cross sectional area of the hollow space within the elastomer member taken in the plane of the area S_1, S_1 including S_2, a plurality of paired mounting rings, each pair of mounting rings being secured to opposite longitudinal ends of one of said tubular elastomer members, a plurality of core rods each being secured to one of the paired mounting rings of corresponding one of the elastomer members so as to extend in alignment with the longitudinal axial center line of the elastomer member, guide members formed in said automobile body so as to guide corresponding one of said core rods, and a plurality of paired bearing sleeves, each pair of sleeves being disposed between said guide and said core rod for slidably supporting said core rod at two axially spaced points.

3,857,597

DISPOSABLE CONTAINER MEANS

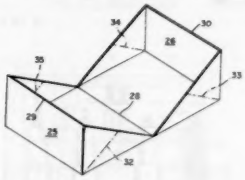
Carl Young, 7411 Fourth Ave., Melrose Park, Pa. 19126

Division of Ser. No. 215,792, Jan. 7, 1972, abandoned. This application Jan. 29, 1973, Ser. No. 327,346

Int. Cl. A47l *13/52*

U.S. Cl. 294—1 R **4 Claims**

1. Disposable container means for inexpensively disposing of refuse and adapted to be transported in a substantially compact state, said container means comprising a unitary structure having two identical semirigid members hinged together and biased in an open position, each member consisting of four pieces joined together including two rectangular pieces joined together at a right angle and joined to two opposing end pieces having a triangular shaped configuration forming a right angle, the sides of each triangular shaped end



piece being equal in length to the width of the respective rectangular piece to which the sides are joined; said semi-rigid members being hinged together along one edge of identical rectangular pieces in both members such that corresponding edges of each member can be pressed together to form an enclosed space for refuse.

3,857,598

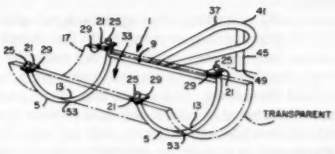
HOT TUBE HANDLING DEVICE

George W. Jelich, 871 Tulane Ct., Mountain View, Calif. 94040

Filed Sept. 24, 1973, Ser. No. 400,007

Int. Cl. B65d *61/00*

U.S. Cl. 294—27 R **4 Claims**



1. A device for holding a semi-conductor wafer containing boat in a substantially horizontal and non-rotating position within a tubular or hemi-tubular recess while transporting the boat and for holding the tubular or hemi-tubular recess and the boat in a substantially horizontal position upon a horizontal plane or surface, comprising:

a frame including two rigid spaced ribs, each of said ribs being adapted to mateably receive a cylindrical surface of a body having at least a partial cylindrical surface, and a rigid member spanning the space between said ribs, said body having a recess adapted to receive a semi-conductor wafer containing boat;

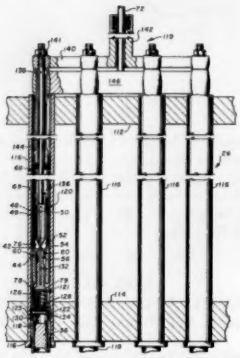
a plurality of washers, each detachably and adjustably attached to the end of one of said ribs by bolts passing therethrough and into the end of said one of said ribs, each of said washers extending beyond the cross section of the end of each of said ribs, said washers serving to secure said cylindrical surface to said frame and to prevent rotation of said body about the longitudinal axis of said cylindrical surface;

a handle attached orthogonally to said rigid member so that said handle is perpendicular thereto and substantially parallel to a generally horizontal surface and a post attached to the other end of said handle, said post in conjunction with said ribs and said handle serving to hold said frame above said generally horizontal plane in such a manner that the longitudinal axis of said cylindrical surface is above and substantially parallel to said plane.

3,857,599
GRIPPER DEVICE

Thomas Alan Jones, Bolton, and Andrew James Anthony, Tariffville, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 1, 1972, Ser. No. 311,186
Int. Cl. G21c *19/10*; E21b *31/02*
U.S. Cl. 294—90 **13 Claims**



1. A gripper device for remotely coupling a linearly moving drive member to a member to be driven, said gripper device comprising:

longitudinally extending gripping means movable into and out of gripping engagement with the member to be driven, said gripping means having mutually opposed, longitudinally spaced upper and lower gripping surfaces defined therealong, said upper and lower gripping surfaces each being obliquely disposed relative to the longitudinal direction and being the sole surfaces of said gripping means to engage the member to be driven;

a gripper support member supporting said gripping means and connected to the drive member;

a gripper operating member relatively longitudinally movable between a first position and a second position relative to said gripping means, said gripper operating member when in said first position continuously applying an obliquely oriented force relative to said gripping means to force said gripping means into gripping engagement with the member to be driven, and said gripper operating member when in said second position releasing the obliquely oriented force;

means for moving said gripper operating member between said first and second positions; and

means for locking said gripper operating member in said first position.

3,857,600
LOCKING MEANS FOR CLAMPS

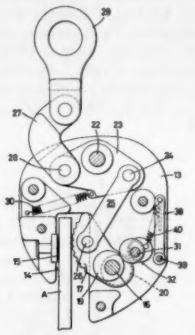
Shojiro Hasegawa, Osaka, Japan, assignor to Nittan Kohki Kabushiki Kaisha also known as Nittan Konki Co., Ltd., Sakai City, Osaka, Japan

Filed Sept. 21, 1973, Ser. No. 399,308
Claims priority, application Japan, Oct. 25, 1972, 47-123696
Int. Cl. B66c *1/44*
U.S. Cl. 294—104 **1 Claim**

1. A lock apparatus for a clamp, said clamp having a clamp body, a clamping piece rotatably pivoted at its base end on said clamp body, an abutment plate affixed to said clamp body opposite the clamping piece, and lifting means pivotally attached to said clamp body and to said clamping piece, whereby said clamping piece will rotate in the clamping direction toward the abutment plate when the clamp body is suspended by the lifting means and the item to be held will be clamped therebetween, said lock apparatus comprising

a pair of base cam members located on the base end of said clamp piece eccentric with regard to each other and the pivotal axis of the base end portion of the clamp piece,

a lock cam comprising a pair of lock cam members eccentric with regard to each other rotatably mounted for rotation between two positions on the clamp body at a position adjacent the base end of the clamp piece, one of said lock cam members engaging one of said base cam



members when the lock cam is rotated in one direction, and the other of said lock cam members engaging the other of said cam members when the lock cam is rotated in the opposite direction, whereby movement of the clamping piece is restricted and said clamping piece is locked into position,

a lever mounted on the clamp body with its fixed base end pivoted adjacent the lock cam, and

a spring attached between the free end of the lever and the lock cam, whereby moving the lever upward will cause the lock cam to rotate in one direction and moving the lever downward will cause the lock cam to rotate in the opposite direction.

3,857,601
CANOPY FOR PICKUP TRUCKS

Joseph W. Robbins, 1395 W. Jones Greek Rd., Grants Pass, Oreg. 97526

Filed Mar. 8, 1973, Ser. No. 339,140
Int. Cl. B60p *7/02*
U.S. Cl. 296—10 **1 Claim**

1. A complete, unitary, camper canopy for pickup trucks having

a. a top and side wall member composed chiefly of a single piece of strong, tough, tinted, optically transparent plastic, adapted to extend from tray wall to opposite tray wall of the pickup,

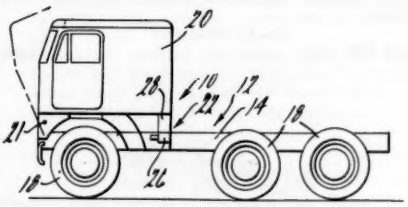
b. a front wall of strong, tough, clear, untinted, optically transparent plastic, adapted to extend from the tray wall to the top of the canopy,
c. rigid attaching means through which the side walls of the canopy may be continuously marginally attached to the pickup body,
d. resilient cushioning means continuously interposed between the lower canopy side wall margins and the attaching means and secured to both through adhesion, and
e. a rear wall composed chiefly of the same, strong, tough, tinted, optically transparent plastic as the top and side wall member, which rear wall extends from the tail gate to the top of the canopy, the cushioning means consisting of strips of deformable, resilient rubbery material, and the rigid attaching means at each side of the canopy consisting of an angle bar that extends substantially the full length of the canopy, each such angle bar having a substantially horizontal web through which connection to the pickup body may be mechanically effected, and an angularly related web having the slope of the associated canopy side wall through which the cushioned connection to the canopy is maintained by adhesion.

3,857,602

MOUNTING FOR TILT CAB VEHICLES

Lawrence E. Karkau, Lansing, and Samuel G. Rusco, Diamondale, both of Mich., assignors to Diamond Reo Trucks, Inc., Lansing, Mich.

Filed Jan. 29, 1973, Ser. No. 327,665
Int. Cl. B62d *33/06*
U.S. Cl. 296—35 A **10 Claims**



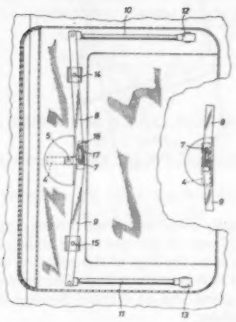
1. A mounting mechanism for detachable securing a tilting cab on the chassis frame of a motor vehicle comprising, a first pivot element adapted to be releasably supported in a fixed position relative to said frame for release upon tilting of said cab relative to said frame, a second pivot element adapted to be supported in a fixed position relative to said cab, a guide link pivotally connected to said first pivot element, a master link connected to said second pivot element, and a third pivot element connecting said links to each other for relative movement thereof, all of said pivot elements having pivot axes disposed parallel to each other and normally being disposed in a common plane to position said links to restrain movement of said first pivot element relative to said second pivot element, said guide link being movable in response to movement of said first and second pivot elements laterally of each other to move said third pivot element out of said plane and permit limited separation of said first and second pivot elements relative to each other when said first pivot element is in said fixed position relative to said frame.

3,857,603

CLAMPING LINKAGE FOR AUTOMOBILE SLIDING ROOFS

Hans Jardin, Krailling, Germany, assignor to Webasto-Werk W. Baier KG, Stockdorf/Munchen, Germany

Filed Apr. 9, 1973, Ser. No. 349,184
Claims priority, application Austria, Apr. 10, 1972, 3066/72
Int. Cl. B60j *7/00*
U.S. Cl. 296—137 F **6 Claims**



1. In a mechanism for the blocking and release of the longitudinal mobility of a rigid automobile sliding roof by means of oppositely arranged lateral clamping devices or the like, an actuating device comprising in combination:

two clamping rods extending near the longitudinal sides of the sliding roof, a first end of each rod being connected to one of said clamping devices, the clamping rods being movable longitudinally between a set position in which the mobility of the sliding roof is blocked and a released position in which the sliding roof is movable longitudinally between its open and closed positions;

two transversely extending rocking levers mounted in the sliding roof structure, the levers including: outer ends by which they are connected to the second ends of the clamping rods, inner end portions vertically overlapping one another in the midportion of the sliding roof, and a vertical-axis pivot between their outer and inner ends;

an operating handle positioned adjacent said overlapping inner end portions of the rocking levers, the handle being mounted on the sliding roof and rotatably connected thereto by a vertical-axis pivot; and

actuating means defined by said overlapping inner end portions and by the operating handle for obtaining a fore and aft pivoting motion of the rocking levers from a rotary motion of the operating handle so as to set and release said clamping devices, said actuating means being of the cam and cam follower type.

3,857,604

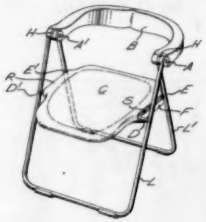
FOLDING CHAIRS

Frederick Scott, Ross on Wye, England, assignor to Hille International Limited, Watford, Hertfordshire, England

Filed July 5, 1973, Ser. No. 376,569
Claims priority, application Great Britain, July 13, 1972, 32818/72
Int. Cl. A47c *4/00*
U.S. Cl. 297—16 **5 Claims**

1. A folding chair comprising a back rest member having opposite arm rests which include terminal ends, a pair of front legs, a pair of rear legs, a seat, a pivotal connection joining one of said terminal ends to one front leg and one rear leg, a pivotal connection joining the other of said terminal ends to the other front leg and the other rear leg, said back rest and said legs being relatively movabale about said pivotal connections between a folded position in which the back rest and legs

extend in opposite directions from the pivots in a substantially common plane and an erected position in which the front and rear legs extend at an acute angle to one another, abutment means between at least one of said terminal ends and one of said legs pivotally connected thereto for supporting said back



rest in a substantially horizontal plane, pivots connecting said seats to the legs of one of said pairs, and sliding connections connecting the seat to the legs of the other of said pairs for movement of said seat between a folded position substantially in said common plane and an erected position in a substantially horizontal plane.

3,857,605

ARM FOR A CHAIR

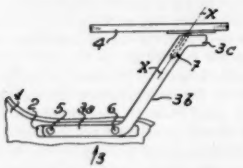
Marco Fantoni, Milan, Italy, assignor to Tecno S.p.A. Mobili e forniture per arredament, Milan, Italy

Filed Dec. 22, 1972, Ser. No. 317,517

Claims priority, application Italy, Jan. 13, 1972, 020503/72

Int. Cl. A47b *39/00*

U.S. Cl. 297—162 **2 Claims**



1. A chair mountable arm and writing table which comprises in combination, an arm having means for securing to the side of a chair, said arm having a forwardly inclined body member terminating in an end portion, said end portion having a bore the axis of which is inclined forwardly, upwardly and outwardly relative to a horizontal plane, a rotatable cylindrically pivot disposed within the bore, one end of said pivot being connected to a writing table, said writing table being pivotally rotatable backwardly, outwardly and downwardly from a horizontal writing position to a vertical non-use position.

3,857,606

SWING-AWAY DETACHABLE WHEELCHAIR FOOTREST

Keith S. Rodaway, Culver City, Calif., assignor to Everest & Jennings, Inc., Los Angeles, Calif.

Filed Nov. 29, 1973, Ser. No. 419,955

Int. Cl. A47c *7/50*

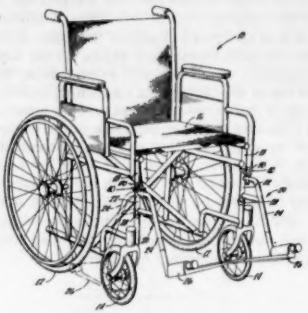
U.S. Cl. 297—429 **6 Claims**

1. A swing-away footrest for connection to a wheelchair having a front member, said footrest comprising:

a hanger plate mounted in face-to-face relation on said front member;

a downward extending collar flange around said front member forming an upper circular channel;

an upward extending collar flange around said front member forming a lower circular channel, said upper and lower circular channels facing each other to receive the upper and lower ends of said hanger plate;



a footrest support member connected to said hanger plate; and

means acting cooperatively with said front member and said footrest support member for locking said footrest in the forward position.

3,857,607

DEVICE FOR SHIFTING A BUCKET PIVOTED TO A VEHICLE

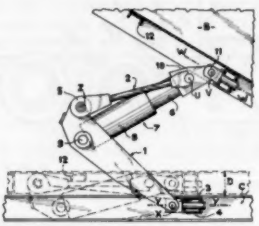
Henri-Jean Daubresse, Paris, France, assignor to Decauville, S.A., Corbeil-Essonnes, France

Filed May 9, 1973, Ser. No. 358,612

Claims priority, application France, May 24, 1972, 72.18409

Int. Cl. B61d *9/10*

U.S. Cl. 298—22 J **7 Claims**

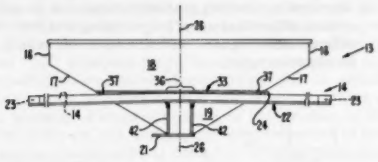


1. A device for shifting an element constituted by a bucket which is mounted to pivot on an element constituted by a chassis of a vehicle, comprising a compass-like arrangement of two pivotably interconnected arms having free ends, and a hydraulic cylinder device having a piston part and a cylinder part which are relatively slidable in a rectilinear path, a first of said arms being combined with a first pivot for pivotally connecting the first arm to a first of said elements, a first of said slidable parts having a rigid outer end portion combined with a second pivot for pivotally connecting the first part to a second of said elements and a third pivot combined with the end portion in spaced relation to the second pivot for pivotally connecting the first part to the second arm adjacent the free end of the second arm, a second of said parts being combined with a fourth pivot for pivotally connecting the second part to the first arm, the fourth pivot being intermediate the first pivot and the pivotal interconnection of the arms.

3,857,608
ANCHOR FOR TRAILER SUPPORTED HOPPER

Morrison Kai Norton, and Lawrence Raymond Timko, both of Woodland, Calif., assignors to Titan Trailer Corporation, Woodland, Calif.

Filed Mar. 23, 1973, Ser. No. 344,427
Int. Cl. B60p *1/56*
U.S. Cl. 298—35 M **8 Claims**

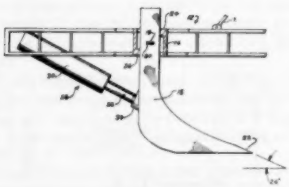


1. Anchor for trailer-supported hopper comprising:
a. a hopper supporting frame including an elongated, fore and aft saddle mounted on each side of a hopper for supporting engagement with a respective one of a pair of underlying longitudinal side rails of a trailer, said fore and aft saddle including an inverted L-shape in section member having a horizontal portion supported on top of the respective subjacent side rail and a vertical portion depending from the inner edge of said horizontal portion and terminating in a lower fore and aft margin, said hopper supporting frame further including a hopper floor support channel secured at its upper end to said vertical portion of said saddle and extending transversely angularly downwardly and inwardly below the hopper floor in supporting relation thereto;
b. an adapter frame mounted on each side of the hopper below and adjacent the transverse center line of each of said saddles;
c. a rail frame mounted on the bottom of each of the rails in register with a respective one of said adapter frames; and,
d. means for attaching said adapter frames to said rail frames, said attaching means being effective to transfer thrust forces between said rail frames, said adapter frames and said hopper supporting frames.

3,857,609
IMPACT RIPPER SHANK

Henry T. Felix, P.O. Box 1132, Ozona, Tex. 76943

Filed Sept. 27, 1973, Ser. No. 401,356
Int. Cl. A01b *13/08*
U.S. Cl. 299—37 **8 Claims**

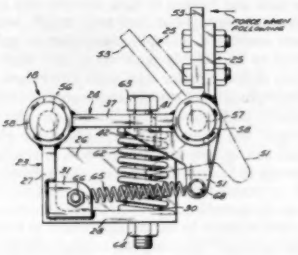


1. An impact ripper COMPRISING:
a. a frame,
b. a ripper in the frame,
c. an anvil on the back of the ripper integral therewith,
d. draft means attached to the frame for drawing the frame forward,
e. an impact device for driving the ripper forward and downward including:
i. a hammer mounted in
ii. a cylinder,
iii. said cylinder being means for shooting the hammer forward and downward against said anvil,
f. the axis of the cylinder aligned with the anvil and with the forward lower most tip of the ripper,
g. said ripper including a vertical extending shank connected into said frame by a lost motion connection above the line extending from the axis of the cylinder to the tip of the ripper, so that impacts of the hammer on the ripper cause the ripper to move about said last motion connection.

3,857,610
GAGE SCRAPER FOR BIROTATIONAL TUNNELING MACHINES

Larry L. Snyder, Richfield, Ohio, assignor to Jarva, Inc., Solon, Ohio

Filed Nov. 23, 1973, Ser. No. 418,688
Int. Cl. E01g *3/04*
U.S. Cl. 299—86 **12 Claims**

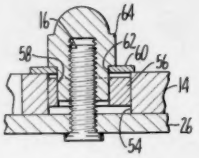


1. A tunneling machine comprising a head rotatable in a first direction and in a second direction opposite said first direction, a roller cutter mounted on said head for engaging a surface of a tunnel with rolling contact, scraper means for clearing material from the path of said roller cutter when said head is rotated in either one of said first and second directions, said scraper means including a first scraper and a second scraper, said first scraper being mounted on one side of said roller cutter, said first scraper leading said roller cutter when said head rotates in said first direction and following said roller cutter when said head rotates in said second direction, said second scraper being mounted on the other side of said roller cutter, said second scraper leading said roller cutter when said head rotates in said second direction and following said roller cutter when said head rotates in said first direction, each of said scrapers including a blade for clearing materials from said tunnel surface when leading said roller cutter and mounting means for mounting said blade on said head, and each of said mounting means including means for moving its associated blade in a direction away from said tunnel surface when following said roller cutter by application of at least a first predetermined force exerted on said blade whereby bending and breaking of either of said first and second scrapers and accumulation of materials between either of said first and second scrapers and said roller cutter when following said roller cutter is avoided.

3,857,611
WHEEL AND ALIGNMENT ASSEMBLY

Emil J. Pansky, Hillsborough, and Donald G. Dean, Lafayette, both of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.

Division of Ser. No. 4,557, Jan. 20, 1970, Pat. No. 3,779,610.
This application Sept. 24, 1973, Ser. No. 400,053
Int. Cl. B60b *3/16*
U.S. Cl. 301—9 DN **5 Claims**



1. A wheel having adapter means to selectively adapt said wheel to axle flanges having threaded studs of differing concentric arrangements, said means comprising a center hub portion of the wheel formed with a plurality of smooth-walled, oversized stud apertures contoured to accommodate threaded axle-flange studs arranged on a defined plurality of differing circular radii and formed to have substantially uniform internal dimensions throughout their axial length, interchangeable alignment inserts of multiple configuration and orientation contoured to be slidably received in said stud apertures to selectively define circular stud holes coincident with each of the defined plurality of stud arrangements and formed to have substantially uniform external dimensions throughout their axial length, flat retainer washers which are placeable over said studs and against said hub portion to confine said alignment inserts in said stud apertures, said washers covering, at least in substantial part, said stud apertures, and lug nuts having an elongated neck portion threadable on said studs and against said washers to secure said wheel to said axle flange, said alignment inserts having two configurations: an off-center insert having an asymmetrically located stud hole to make each said insert reversible in orientation in said stud apertures to alternatively accommodate threaded studs arranged on the largest circular radii and studs arranged on the smallest circular radii; and an on-center insert having a centered circular stud hole to accommodate a median diameter stud bolt circle, said circular stud holes of said alignment inserts being sized to receive said neck portion of said lug nuts which extends through said retainer washers and into the alignment inserts when said lug nuts are threaded on said studs.

3,857,612
DIFFERENTIATOR AND VARIABLE THRESHOLD GATE CIRCUIT FOR USE IN A VEHICLE SKID CONTROL BRAKING SYSTEM

Byron G. Bynum, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

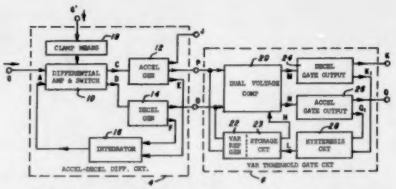
Filed Sept. 5, 1972, Ser. No. 286,386
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 BE **8 Claims**

1. In a vehicle skid control braking system of the type which monitors land wheel speed to provide an input to the skid control system and which generates in response thereto output signals representative of other vehicle conditions for selectively interrupting application of the brake system of the vehicle, a differentiator and threshold circuit providing output signals representing acceleration and deceleration conditions of the vehicle wheels above a variable threshold level, comprising in combination:

differentiator circuit means responsive to a first input signal representative of vehicle wheel speed for providing a first differentiator signal representative of wheel acceleration conditions, a second differentiator signal representative of wheel deceleration conditions, and a third differentiator signal representative of wheel acceleration conditions, said differentiator circuit means comprising:

differential amplifier and switch means responsive to said first input signal and to a feedback input signal having a magnitude representative of a rate of vehicle wheel speed incrementally approaching that rate represented by said first input signal, for providing an acceleration differential signal and a deceleration differential signal,

an acceleration current generator responsive to said acceleration differential signal for providing said first and third differentiator signals representative of vehicle wheel acceleration rates,



a deceleration current generator responsive to said deceleration differential signal for providing said second differentiator signal representative of vehicle wheel deceleration rates, and

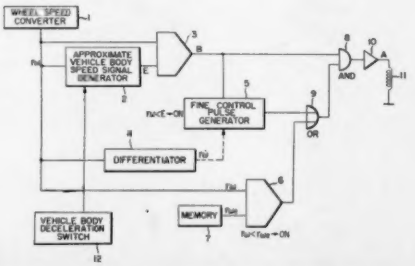
an integrating circuit means responsive to said acceleration and deceleration current generators for selectively providing the mathematical integral of said acceleration and deceleration differentiator signals to thereby provide said feedback input signal; and

a threshold gate circuit means having a single variable threshold level and responsive to said differentiator signals for selectively providing first and second output signals when said differentiator signals exceed a variable threshold level, said output signals generated at a wheel acceleration and deceleration rate lower than that rate whereat they are deactivated.

3,857,613
ELECTRONIC CONTROLLER FOR USE IN ANTI-SKID SYSTEM FOR VEHICLES

Tetsuro Arikawa, Yokosuka, Japan, assignor to Nippon Air Brake Company Ltd., Kobe, Japan

Filed June 4, 1973, Ser. No. 366,456
Claims priority, application Japan, Sept. 29, 1972, 47-95730
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 BE **2 Claims**



1. A controller for use in an anti-skid system for vehicles comprising means for detecting the rotating speed of a wheel

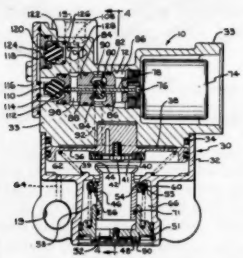
of the vehicle, means for converting the output of said wheel speed detecting means into a wheel speed responsive signal, means for generating an approximate vehicle body speed pattern signal when the rate of reduction of the output of said converting means reaches the level of a predetermined reference setting, means for comparing the approximate vehicle body speed pattern signal with the output of said converting means thereby generating a control signal when the wheel speed responsive signal is less than the pattern signal, means for differentiating the wheel speed responsive output of said converting means thereby producing an output representative of wheel deceleration and wheel acceleration, means for generating a constant frequency fine control pulse signal having "on" and "off" durations proportional to the output of said differentiating means, switch means responsive to vehicle body deceleration for changing over said reference setting to one of a plurality of levels depending on the variation of the conditions of the ground, and an AND gate connected to said comparing means and said fine control pulse signal generating means for combining said control signal with said fine control pulse signal thereby generating a brake fluid pressure control signal.

3,857,614

AIR BRAKE ANTISKID CONTROL

Sham L. Kurichh, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Oct. 12, 1973, Ser. No. 405,835
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F **14 Claims**



1. In an antiskid air brake system for a vehicle having means to signal the presence of brake lock condition at the wheel of a vehicle, the combination comprising:

a housing forming control, supply and delivery ports adapted for connection to a source of variable control pressure, a source of operating pressure and brake actuating mechanism, respectively;

relay valve means including a control chamber responsive to variable pressure at said control port to deliver air from said supply to said delivery port to apply the brake and from said delivery port to the atmosphere to release the brakes;

air metering means disposed between said supply and delivery ports and being movable from a first position maintaining full communication between said supply and delivery ports to a second position restricting air flow therebetween;

control valve means having a first position in which said control chamber communicates with said control port to receive variable control pressure to operate said brakes and a second position in which said control chamber is closed to said control port and open to the atmosphere to release said brakes;

said air metering means being movable from said first to said second position in response to movement of said control valve means to said second position, said metering means being retained in its said second position upon return movement of said control valve means to said first position; and

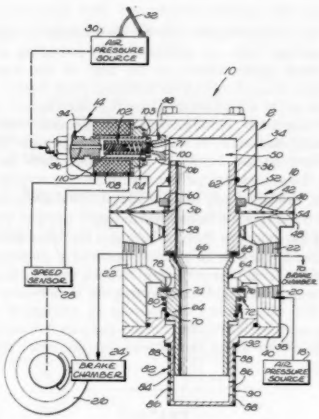
solenoid means responsive to a signal to move said control valve means from said first to said second position and on termination of said signal from said second to said first position.

3,857,615

PRESSURE REGULATING VALVE ASSEMBLY

Ali Acar, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 415,009
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F **26 Claims**



1. A pressure regulating valve assembly comprising:

a valve body embodying primary valve means and pilot valve means;

said primary valve means including fluid pressure inlet and outlet ports, a vent valve and a valve element movable between first, second and third positions, in said first position said valve element blocking flow of fluid between said inlet port, said outlet port and said vent valve, in said second position said valve element providing flow communication between said inlet and outlet ports, and in said third position said valve element providing flow communication between said outlet port and said vent valve;

means resiliently biasing said valve element to said first position;

said pilot valve means being operable to shift said valve element to said second and third positions;

flow restrictor means including a slidable piston-like element interposed between said pilot valve means and said primary valve means and being movable between relatively high and low flow restriction positions; and

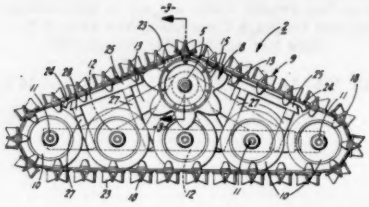
positioning means engageable with said piston-like element for positioning said element in said relatively high flow restriction position upon introduction of a predetermined fluid pressure into said pilot valve means.

3,857,616

SLIDE FOR PREVENTING EXCESSIVE VIBRATION IN AN ENDLESS TRACK UNIT

Emitt M. Tucker, Ashland, and J. Morris Tucker, Medford, both of Oreg., assignors to Tucker & Sons, Sacremento, Calif.

Filed Oct. 2, 1973, Ser. No. 402,808
Int. Cl. B62m *27/02*
U.S. Cl. 305—25 **3 Claims**



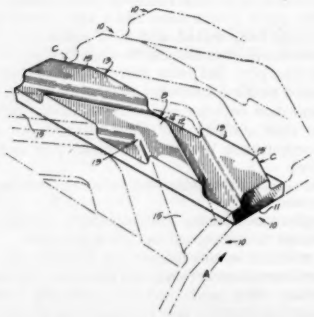
1. In an endless track unit which includes a longitudinal mount having ends, an endless track extending about the mount, track guide wheels on the ends of the mount, dual transversely spaced sprockets engaged from below with the upper run of the track intermediate the ends thereof, the track having transverse, sprocket-engaged traction bars spaced apart circumferentially of the track, and rigid plate-like wheel ramps fixed on the inside of the traction bars for passage between the sprockets; the improvement characterized by the inclusion, in such track unit, of longitudinal slide means disposed in fixed relation beneath said upper run and matchingly engaging the portions thereof between the sprockets and the guide wheels whereby to prevent downward displacement of said portions from planes tangent to such sprockets and guide wheels, and means rigidly supporting the slide means from the mount; the slide means comprising an elongated slide bar engaging such upper run for substantially its full length and in the plane of the wheel ramps whereby the latter engage the slide bar.

3,857,617

SPLIT CHEVRON TRACK SHOES FOR TRACK BELTS

Charles E. Grawey, Peoria, Ill., assignor to Caterpiller Tractor Co., Peoria, Ill.

Filed Apr. 30, 1973, Ser. No. 355,477
Int. Cl. B62d *55/08*
U.S. Cl. 305—38 **13 Claims**



1. In combination with a flat circular belt reinforced with at least one cylindrical ply of inextensible reinforcing centrally disposed therein and encased in elastomer which forms the surfaces of said belt, a plurality of track shoes, each comprising:

a rectangular track shoe composed of elastomer having an inner mounting surface and an outer working surface, said inner mounting surface including a metal channel-shaped mounting means which is bonded to said track shoe and which forms part of the inner mounting surface of each track shoe;

a raised grouser pattern on the working surface of said rectangular track shoe; and

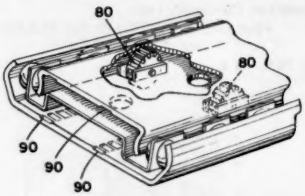
attaching means associated with the ends of each of said channel-shaped means operable to connect said track shoe to said belt.

3,857,618

SYNCHRONIZATION AND PRECISION SEQUENCING OF BALL RETAINER RELATIONSHIP TO ONE-HALF OF SLIDE MOVEMENT

Magnus F. Hagen, 3713 Twilight Dr., Fullerton, Calif. 92632, and Fred H. Jordan, 14906 Lodosa Dr., Whittier, Calif. 90605

Filed Mar. 21, 1973, Ser. No. 343,527
Int. Cl. F16c *29/00*
U.S. Cl. 308—3.8 **7 Claims**



1. Synchronized elements for telescoping ball bearing slide mechanisms, comprising:

an outer slide member of generally channel shape and having a longitudinally extending bottom wall and oppositely arranged ball races along the side edges of the bottom wall, said ball races being concave in cross section and having said concave portions facing inwardly;

an inner slide member of generally channel shape and having a longitudinally extending bottom wall and oppositely arranged ball races along the side edges of the bottom wall, said ball races being concave in cross section and having said concave portions outwardly, the inner slide member being operably disposed within the outer slide member;

bearing balls disposed in adjacent concave portions of said ball races of the respective outer and inner slide members;

a ball retainer operably disposed between the outer and inner slide members for retaining the balls operably in the ball races;

a pair of mesh wheels adjacent opposite sides of the slide mechanism operably connected to the ball retainer and movable in accordance with relative longitudinal movements of the slide members;

and racks comprising a separate part on the bottom walls of the inner and outer slide members, said racks being in the path of movement of the meshing wheels and cooperating therewith

wherein the ball retainer has longitudinally extending bottom parts and a reversed raised channel shaped longitudinally extending part connected with said bottom parts by connecting walls normal to the bottom parts, said ball retainer having retainer arms with openings in at least some of said retainer arms for retaining balls in longitudinally spaced relationship; pivot pins having end portions operably received in openings provided therefor in each

of the connecting walls of the ball retainer, the meshing wheels being mounted on said pivot pins for operable rotation;

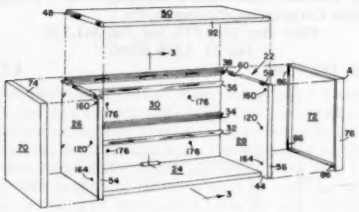
said wheels extending through openings in one of the bottom parts of the ball retainer for engagement with the adjacent racks in order to maintain a synchronized relationships between the ball retainer and the slide members.

3,857,619

MODULAR CABINET SYSTEM

Fred C. Adickes, Playa Del Ray, Calif., assignor to The Texstar Corporation, Grand Prairie, Tex.

Filed Feb. 8, 1974, Ser. No. 440,815
Int. Cl. A47b *47/00, 57/08*
U.S. Cl. 312—107 **5 Claims**



1. A modular cabinet system having a basic unit that can be altered to form cabinets of different types, said basic unit comprises:

a bottom;

a back secured to said bottom, said back having at least four upwardly extending channels lengthwise thereof, said channels being adapted to support and retain items used to form said different type cabinets;

ends for said cabinet with said ends being secured to said back and bottom;

a top being supported on the front by said ends and on the rear by the uppermost of said channels, all parts of said basic unit being bonded together into an integrally bonded basic unit, said bottom, back and ends are molded as one piece of the basic unit;

end covers for bonding to said molded piece and said top to form said basic unit;

a shelf similar to said top inserted within the molded piece to form the basic unit, the rear of said shelf is supported by the center channel of three remaining empty channels and in front by pins in the wall of said ends; and

drawers of uniform depth to fit the shelves formed in said basic unit, said drawers having varying widths and lids for sealing to protect items contained in said drawers, said drawers and lids being molded with a taper to retain said lid in the top of same drawers and snugly fitting therein, said drawers and lids being of a semi-transparent type and having a downward flange on the rear thereof to mate with one of the channels to provide a retaining force on said drawers.

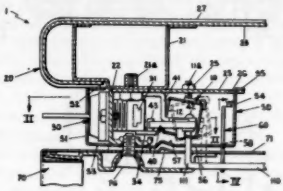
3,857,620

DESK LOCK SYSTEM

Donald D. Korell, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed June 1, 1973, Ser. No. 366,071
Int. Cl. F05b *65/46*
U.S. Cl. 312—219 **22 Claims**

1. A locking system for the drawers, doors or like components of a desk, cabinet or like articles of furniture, said locking system comprising: an elongated rock bar pivotally suspended in said article of furniture for fore and aft swinging movement; lock means operably connected to said rock bar for controlling the fore and aft swinging movement thereof; secondary locking means operably connected with said components for locking and unlocking said components; said rock



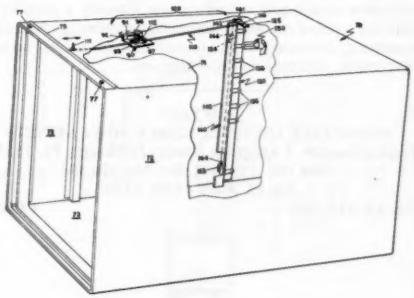
bar and said secondary locking means including cooperating means cooperating to operably connect said rock bar to said secondary locking means whereby said fore and aft swinging movement of said rock bar effects locking and unlocking movement in said secondary locking means.

3,857,621

PEDESTAL LOCK SYSTEM

Douglas Sheerhorn, Grand Rapids; Dirk J. Van Kuik, Jenison; Donald D. Korell, and Robert G. Mohr, both of Grand Rapids, all of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Filed June 1, 1973, Ser. No. 366,162
Int. Cl. E05b *65/46*
U.S. Cl. 312—219 **33 Claims**

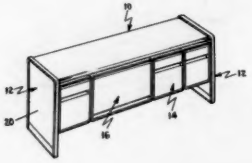


1. A locking system for locking the drawers, doors or like components of a desk pedestal or like compartment, said component including a lock stop, said locking system comprising: a lock bar mounted in said compartment for pivotal movement between a first, unlocking position and a second, locking position; said lock bar including two generally parallel walls, at least one wall deviating from the other at a plurality of spaced points to thereby define a plurality of channels between said walls at said points; at least one lock tab having a base area adapted to be releasably received within any one of said channels; said lock tab including a projecting portion projecting outwardly from said lock bar; means for pivoting said lock bar between said first and second positions, said lock tab projecting into the path of said lock stop on said component to thereby lock said component in said compartment when said lock bar is pivoted to said second locking position.

3,857,622
END PANEL SUPPORT SYSTEM

Robert G. Mohr, Grand Rapids; Ronald R. Hodges, Grandville; Douglas Scheerhorn, Grand Rapids; Gale F. Wilcox, Wayland, and Jack Hockenberry, Grand Rapids, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed June 1, 1973, Ser. No. 366,218
Int. Cl. A47b *43/00, 17/00, 19/00*
U.S. Cl. 312—257 **21 Claims**

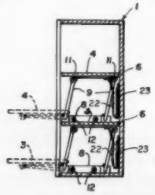


1. A furniture system comprising: a plurality of pairs of structural, load-bearing end support panels of a construction sufficiently strong to support a top and cabinet suspended from the top without the necessity of an additional conventional structural desk frame; the end panels in each of said pairs of end support panels having differing depths from front to rear and differing heights from top to bottom from the end panels in other of said pairs; a plurality of tops of differing lengths and of differing depths from front to rear; a plurality of differing types of cabinets; first releasable securing means on each of said tops and on said end support panels to facilitate the ready securance or removal of one of said plurality of tops between one of said pairs of end support panels whereby a top is supported by said end support panels when attached thereto; second releasable securing means on said cabinets and on said tops for readily releasably securing each of said cabinets to any one of said tops in a suspended manner from said top when said top is secured to and supported by one of said pairs of said end support panels whereby a plurality of different types of end panel supported furniture can be readily assembled, disassembled and reassembled from said end support panels, said tops and said cabinets.

3,857,623
SWINGABLE SHELF ASSEMBLY FOR CABINETS

Frank Schneller, 3 Allegheny Center, Pittsburgh, Pa. 15237

Filed Dec. 29, 1972, Ser. No. 319,331
Int. Cl. A47b *49/00, 91/00*
U.S. Cl. 312—266 **4 Claims**

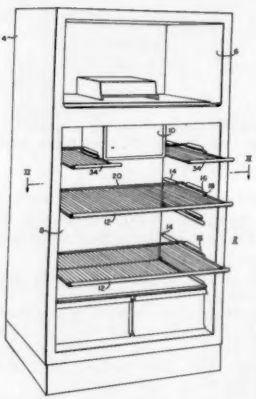


1. In a cabinet or similar structure of the type having sidewalls, spaced front panels attached to said sidewalls, and an intermediate shelf; the combination of a pair of detachable fixtures for pivotally mounting said shelf and allowing maximum shelf storage space, each of said fixtures comprising a horizontally extending first strip detachably fastened to one of said sidewalls, a pair of parallel linkages having one end pivotally mounted on said strip, a second strip detachably fastened to the bottom surface of one side edge portion of said intermediate shelf and provided with a pair of pivotal bearing portions for pivotally mounting the top end of said linkages, both pairs of linkages being inwardly bent so that said second strip is laterally offset away from said first strip so as to clear said front panels when said shelf is pivotally moved by said linkages outwardly of said cabinet, spring washer means connected to one of said linkages for restraining further movement of said shelf after it has moved to a position in substantially the same horizontal plane as said first strips, and means for progressively increasing the amount of clamping pressure on said spring washer means substantially in proportion to the extent of pivotal movement of said linkages in a direction outwardly of the cabinet or similar structure so that maximum resistance to pivotal movement is provided by said spring washer means as said shelf approaches the horizontal plane of said first mentioned strips.

3,857,624
SHELF AND SUPPORT ARRANGEMENT

Carl A. Peterson, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 18, 1973, Ser. No. 361,735
Int. Cl. A47b *88/00*
U.S. Cl. 312—348 **4 Claims**



1. A shelf and shelf support arrangement for a cabinet having opposite vertical walls from which said shelf is adapted to be supported in slidable relation comprising:

shelf support means including a pair of horizontally extending, inwardly projecting ledges on opposite walls, said ledges extending uninterruptedly from adjacent the rear of said cabinet to a location closer to the front of said cabinet than the rear;

a relatively shorter, horizontally extending, inwardly projecting upper ledge spaced above each of the longer ledges and extending for a distance overlying no more than the forward half of the lower ledge;

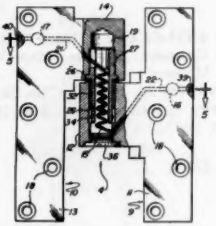
a rectangular shelf having one side with a portion of its length offset inwardly in a shape complementary to said upper ledge to clear said upper ledge when said shelf is in its rearmost position so that said shelf is supported by said lower ledge and said one side is slidably received in the space between said upper and lower ledge when said shelf is moved forwardly;

means located at the rear of said shelf to abut against the rear ends of said upper ledges to stop forward movement of said shelf, and the side of said shelf opposite said one side being straight and devoir of an offset.

3,857,625
ELECTRICAL CONNECTOR HINGE

Burke J. Crane, Lombard, and Bertram M. Shean, Chicago, both of Ill., assignors to Rixson-Firemark, Inc., Franklin Park, Ill.

Filed July 16, 1973, Ser. No. 379,758
Int. Cl. H01r *35/00*
U.S. Cl. 339—4 **10 Claims**

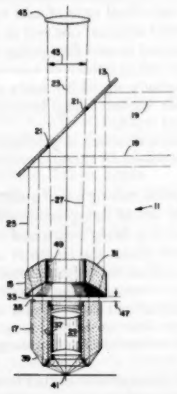


1. An electrical connector hinge comprising a hinge jamb portion having a knuckle and a hinge door portion also having a knuckle with the jamb knuckle being formed with a through bore and the door knuckle being formed with a partial bore with both bores being axially aligned, a pivot tube located within both bores and having a tight fit with the adjacent surface of the door bore and a loose fit with the adjacent surface of the jamb bore, a sleeve bearing housed within the jamb knuckle to envelope the portion of the pivot tube located therein and having a tight fit with the adjacent surface of the jamb bore and a loose fit permitting relative rotation with the adjacent and enveloped portion of the pivot tube, and an electrical cable extending through the passageway formed by the bore of the pivot tube within both knuckles.

3,857,626
MICROSCOPE COAXIAL ILLUMINATION APPARATUS

Harold E. Rosenberger, Brighton, and Ralph B. Young, Henrietta, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 206,033, Dec. 10, 1971, abandoned. This application July 9, 1973, Ser. No. 377,361
Int. Cl. G02b *21/06*
U.S. Cl. 350—91 **4 Claims**



1. Incident dark field illumination apparatus for directing a beam of light to the specimen plane of a microscope, said microscope including an objective having an optical axis, said apparatus comprising:

a. means disposed across said axis for receiving said beam and orientating said beam along a path lying entirely outside the path of the image forming beam which emanates from said objective, said beam as orientated by said orientating means having substantially the cross-section of an annulus, said annulus being centered about said optical axis and having internal and external diameters;

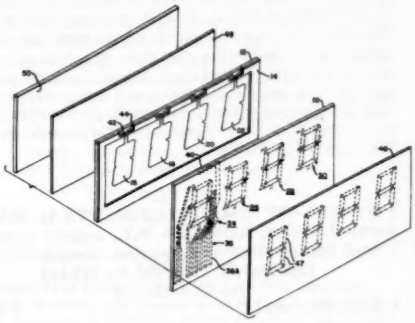
b. dark field condenser means including a beam receiving surface, said surface confined between external and internal cylindrical surfaces which are substantially concentric with respect to said optical axis, the diameter of said external cylindrical surface being smaller than said external diameter of said orientated beam; and

c. beam reducer means including first and second refracting surfaces, said beam reducer means interposed between said orientating means and said dark field condenser means with said first and second surfaces substantially centered about said optical axis and with one of said first and second surfaces immediately adjacent said surface of said dark field condenser means, said first and second surfaces cooperating to reduce said internal and external diameters of said orientated beam so that said orientated beam is reduced to a size compatible with said surface of said dark field condenser means.

3,857,627
POLARIZER ARRANGEMENT FOR LIQUID CRYSTAL DISPLAYS

Thomas B. Harsch, Stow, Ohio, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 29, 1973, Ser. No. 392,632
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **10 Claims**



1. A liquid crystal display comprising a layer of nematic liquid crystal material disposed between front and rear transparent parallel plates, means for effecting a twisted nematic structure in said layer of nematic liquid crystal material, said plates being coated on selected areas thereof with transparent conductive material on opposite sides of said layer of liquid crystal material, the conductive material on said front plate comprising spaced segments adapted to form symbols in an alpha-numeric display when an electrical field is established between selected ones of said segments and a film of conductive material on the rear plate, polarizer means on opposite sides of said layer of liquid crystal material with the polarizer means adjacent said front plate comprising spaced strips of polarizing material covering only said spaced segments of conductive material whereby unpolarized light may pass through the front plate and the liquid crystal layer to the rear plate and its associated polarizing means in the areas not covered by said polarizing strips, and a reflector behind said

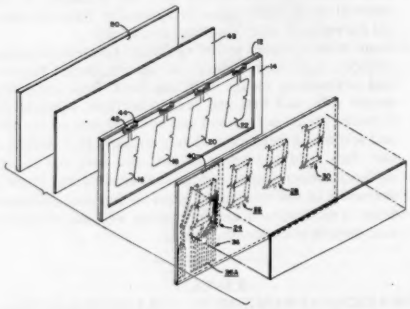
rear plate and polarizing means for scattering polarized light back through the liquid crystal layer and the front plate.

3,857,628

SELECTIVE POLARIZER ARRANGEMENT FOR LIQUID CRYSTAL DISPLAYS

Robert D. Strong, Chagrin Falls, Ohio, assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed Aug. 29, 1973, Ser. No. 392,633
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **5 Claims**



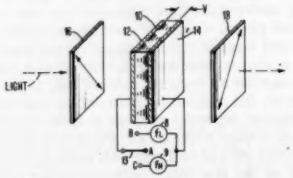
1. A liquid crystal display comprising a layer of nematic liquid crystal material disposed between first and second transparent parallel plates, means for effecting a twisted nematic structure in said layer of liquid crystal material, said plates being coated on selected areas thereof with films of transparent conductive material with the conductive material on one plate comprising segments adapted to form symbols in an alpha-numeric display when an electrical field is established between selected segments on one plate and a film of conductive material on the other plate, polarizers on opposite sides of said layer of liquid crystal material with the polarizer adjacent said one plate covering said conductive segments while not covering at least a portion of said one plate around said segments, and a reflector for scattering polarized light behind said other plate.

3,857,629

FAST TURN-OFF NEMATIC LIQUID OPTICAL DEVICES

Marvin J. Freiser, Scarborough, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 14, 1973, Ser. No. 359,824
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 LC **3 Claims**



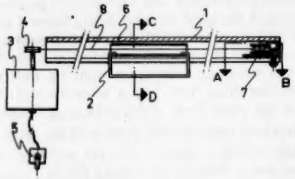
1. An optical device comprising:
- a cell comprising;
- a pair of electrodes adapted to be connected to a voltage generator, and
- a film of nematic fluid contained between said electrodes; said nematic fluid being a material which is characterized by an intrinsic reversal in sign in its dielectric anisotropy, said sign being positive when the frequency of an applied electric field is below, or negative when the frequency is above the dielectric reversal frequency of said nematic fluid;
- a pair of crossed polarizers, said cell being disposed between said polarizers.

3,857,630

MOBILE ANTI-GLARE SHIELD FOR VEHICLES

Cesar Poveda Gonzalez, 23, Rue Prince Moulay Abdallah, Casablanca, Morocco

Filed May 24, 1973, Ser. No. 363,339
Claims priority, application Spain, May 29, 1972, 180914; Mar. 15, 1973, 189742
Int. Cl. B60j *3/02*
U.S. Cl. 350—276 R **2 Claims**

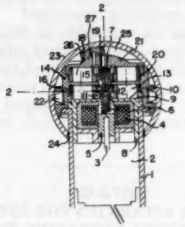


1. A mobile anti-glare shield device for a vehicle, said device comprising:
- a longitudinal hollow track horizontally positionable above the windshield of a vehicle to extend completely across the width thereof, said track having a horizontal longitudinal slot extending throughout the length thereof, said slot extending downwardly;
- first and second pulleys, one each mounted adjacent the opposite longitudinal ends of said track;
- a motor mounted adjacent one end of said track and operatively connected to said first pulley to rotate the same;
- tubular shaped shield holder means mounted to slide horizontally longitudinally within said track, the length of said shield holder means being substantially less than the length of said track;
- a U-shaped frame attached to said shield holder means and extending downwardly therefrom through said slot in said track;
- an anti-glare shield having a flap attached to an upper edge thereof, said shield being removably mounted on said frame by said flap being positioned over the central leg of said U-shaped frame, the length of said shield being substantially less than the length of said track;
- a traction wire connected at the opposite ends thereof to the opposite longitudinal ends of said shield holder means, said traction wire extending longitudinally from said shield holder means ends and passing around said pulleys; and
- reversable switch means connected to said motor for selectively causing said motor to rotate said first pulley in opposite directions, and for thus moving said traction wire, said shield holder means, said frame and said shield horizontally in opposite directions along said track.

3,857,631
ELECTRIC ADJUSTING MEANS FOR AZIMUTH AND ELEVATION ADJUSTMENT

David M. Morgenstern, deceased, late of Shaker Heights, Ohio; by Stanley Morgenstern, Shaker Heights; Harold M. Chatmann, Cleveland, and Allan R. Cole, Cleveland, all of Ohio (executors), assignors to Tenna Corporation, Cleveland, Ohio

Filed Sept. 30, 1971, Ser. No. 185,250
Int. Cl. G02b *5/08*
U.S. Cl. 350—289 **6 Claims**



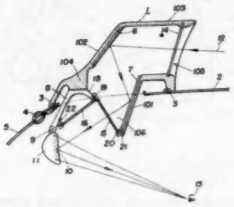
1. An adjusting means for azimuth and elevation adjustment of a mirror to be adjusted comprising a hollow support, a universal joint connected to said support and to the mirror to be adjusted, one single reversible electric motor mounted in said support having a shaft, two planetary transmission means each having a sun pinion wheel and planet wheels meshing with said sun wheel, the sun wheels of said planetary transmission means being disposed coaxially with said motor axis, an electromagnetically controlled coupling whereby said shaft may optionally be coupled with one of said two pinion sun wheels by said electromagnetically controlled coupling, said transmission means being capable of acting on said universal joint to bring about a rotation around two different axes, each one of said transmission means comprising a pulley, a first and a second string being laid loosely in a loop around said first and second pulley respectively, the extremities of said strings each being fixed in two opposite points of said mirror to be adjusted, the line connecting the fixing points of said first string being substantially perpendicular to the line connecting the fixing points of the said second string, and guiding means for guiding said strings from said pulleys towards the respective fixing points of said mirror.

3,857,632
REAR VISION MIRROR APPARATUS HAVING A FILTER FOR AUTOMOBILE

Makoto Yamashita, Sagamihara; Kenkicki Ikura, Yokohama, and Masagoro Kushida, Isehara, all of Japan, assignors to Ichiko Industries Limited, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,625
Claims priority, application Japan, Oct. 11, 1971, 46-90026
Int. Cl. G02b *5/08*
U.S. Cl. 350—302 **6 Claims**

1. A rear vision mirror apparatus of the periscope type for providing a rear field of vision via the roof top of an automobile, comprising: a cylindrical housing fixed to the roof top and having an open rear end and an open front lower portion adapted to open into an upper part of the driver's chamber; an objective mirror and a reflecting mirror arranged in said housing; an eye-piece mirror provided below said open front lower portion of the housing for receiving incident light transmitted via said objective mirror and said reflecting mirror; at least two filters provided between said reflecting mirror and said eye-piece mirror and arranged in such a way that these filters may be selectively positioned either in a plane transverse to the path of light or at a position remote from this path of light, one of said filters having a transmission rate of between 50 percent and 75 percent for light having a wavelength between 400 mμ and 700 mμ, a second of said filters having a transmission rate below 35 percent for light having a wavelength above 600 mμ, such that the amount of visable light rays received may be substantially uniformly reduced over the entire spectrum of visable light rays by said first filter and the amount of light rays received from headlight lamps may be largely reduced by said second filter for a range of wavelengths representing a large proportion of the light output of said headlight lamps; a stay extending from and fixed to each of the opposite sides of the open front lower portion of the housing for supporting said eye-piece mirror; a plurality of filter supports, one extending from and fixed to each of the opposite sides of said



open front lower portion of the housing and being spaced from said stay, said eye-piece mirror being selectively pivotably secured to the lower end of said stay; a shaft extending between and supported by said filter supports located on both sides of the open front lower portion of the housing, said at least two filters being pivotably secured at one of the side edges thereof to said shaft; a first spring, said filter supports each having an extension to provide a site for rotatably attaching one end of said first spring thereto, said first spring having a loop formed intermediately thereof, one end of said first spring being rotably attached to said site of the extension and the other end being rotatably attached to one end edge of one of said filters; and a second spring positioned between the site of the extension of the oppositely located support and one end edge of the other of said filters, whereby the filters may be set selectively to the position transverse to the path of light and to the position remote from this path of light.

3,857,633
PROJECTOR FUNCTION CONTROL MECHANISM

Donald O. Easterly, and Donald E. Day, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

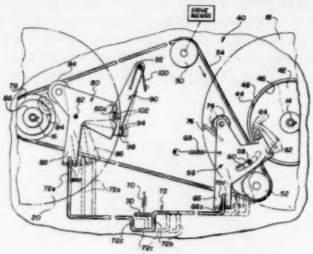
Filed July 25, 1973, Ser. No. 382,636
Int. Cl. G03b *23/00*
U.S. Cl. 352—124 **9 Claims**

1. For a motion picture projector having (1) a light source for projecting images from a received film material, (2) electric drive means for advancing said film material through the projector and (3) a selection lever movable to a plurality of positions to select the mode of operation of the projector from a plurality of modes including off, still, project, rewind and fast forward the improvement comprising:

a. a coordinating plate pivotally supported by said projector, said coordinating plate including an irregularly shaped opening defined by a plurality of edges, said opening being adapted to receive said selection lever which cooperates with different ones of said plurality of edges for moving said coordinating plate between (1) a first position when said selection lever is moved to said position for selecting said project and said still modes of

operation and (2) a second position when said selection lever is moved to the position for selecting said off, rewind or fast forward modes of operation;

b. a film gate comprising a first portion and a second portion, said second portion being movable relative to said first portion between (1) an open position wherein it is spaced from said first portion to permit said film material to be readily inserted between or removed from between said first portion and said second portion or to permit said film material to be readily moved therebetween, and (2)



a closed position wherein said second portion is moved closely adjacent to said first portion such that said received film material is movable along an essentially flat plane defined therebetween to permit projection of images from said film material; and

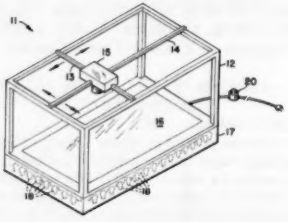
c. linkage means operatively coupling said coordinating plate and said second portion of said film gate such that when said coordinating plate is moved by said selection lever to its first position, said second portion of said film gate is moved to its closed position and when said coordinating plate is moved by said selection lever to its second position, said second portion of said film gate is moved to its open position.

3,857,634

DEVICE FOR SOLVING THE SONAR EQUATION

Alan Gordon, and Michael W. Phelps, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Arlington, Va.

Filed Feb. 13, 1974, Ser. No. 442,303
Int. Cl. G03b *27/32*
U.S. Cl. 355—18 **6 Claims**



1. A simulation device for solving the sonar equation to establish the likelihood of acoustic detection of a marine vessel comprising:

means to establish a light field of a predetermined intensity distribution;

first light modifying means supported by said light field establishing means and having azimuthally symmetrical areas of predetermined optical density corresponding to acoustic transmission properties of a fluid medium for altering the light field intensity;

second light modifying means supported by said light field establishing means in cooperative juxtaposition with said first light modifying means and having radial symmetrical areas of predetermined optical density corresponding to acoustic propagation zonal patterns emanating from the marine vessel for altering the light field intensity;

support means attached to said light field establishing means and extending generally away therefrom in the direction of propagation of said light field for establishing a datum plane within said light field as altered by said first and second light modifying means; and

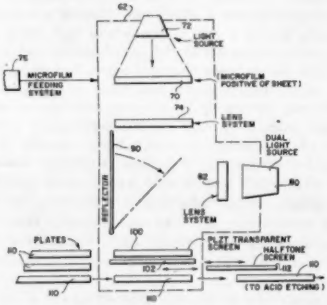
light sensitive means for responding to the light field and effectively connected to said support means to be positioned to intercept the altered light of said light field in said datum plane at a predetermined position and having a light sensitivity curve which is shaped similar to the detection probability curve of acoustic detection of the marine vessel.

3,857,635

SYSTEM AND APPARATUS FOR EXPOSING PHOTOSENSITIVE ENGRAVING PLATES

William R. Niehaus, Cincinnati, Ohio, assignor to The E. W. Scripps Company, Cincinnati, Ohio

Filed Nov. 27, 1973, Ser. No. 419,410
Int. Cl. G03b *27/02*
U.S. Cl. 355—132 **22 Claims**



17. A process for producing an exposed engraving plate at several satellite locations, said plates corresponding to an image at a central location, said system comprising the steps of:

a. encoding said image into a series of transmittable signals at said central location;

b. transmitting said signals to a plurality of satellite locations;

c. decoding said signals at each of said satellite locations to produce a duplication of said image at each of said satellite locations;

d. at each of said satellite stations, providing a generally flat transparent screen formed from a transparent layer of material capable of forming an image therein when concurrently exposed to an electro-magnetic field and a light image, said screen including means for selectively creating said electro-magnetic field;

e. directing a generally uniform light source onto said flat screen;

f. creating said electro-magnetic field in said screen while said generally uniform light is being so directed whereby said layer is cleared of any image therein;

g. focusing said duplication of said image onto said cleared flat screen while said screen is subjected to an electro-

magnetic field; and continuing said focusing step and said electro-magnetic field until said screen duplicates in said layer a transparent negative form of said image;

h. positioning a generally flat photosensitive engraving plate adjacent to said flat screen;

i. directing light through said flat transparent screen onto said engraving plate whereby said plate is exposed to said negative form of said duplication of said image; and,

j. then removing said light from said flat screen.

3,857,636

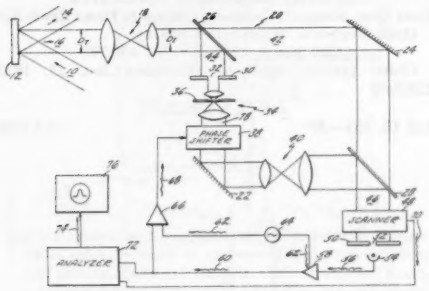
MEASUREMENT OF PHASE PROFILE ACROSS A HIGH POWER LASER BEAM

Albert W. Angelbeck, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 3, 1973, Ser. No. 403,291

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 R **9 Claims**



1. Apparatus for determining the phase profile across a primary beam of optical radiation comprising:

means for extracting sample radiation from the primary beam to provide a test beam which has all the phase and intensity characteristics of the primary beam and is propagated along a distinct test beam optical path;

an interferometer positioned in the test beam optical path to provide an interference beam which is formed by dividing the test beam into a first and a second beam element with each element propagating through the interferometer along separate paths before recombining with each other to form the interference beam upon leaving the interferometer which includes:

means for providing a reference beam of substantially uniform phase and intensity from the first beam element, and

means for causing a shift in the phase of the reference beam;

means for performing a two dimensional scan of the interference beam across an optical detector to allow a continuous sequence of discrete sections of the interference beam to fall on the detector thereby providing a corresponding electrical carrier signal;

a dither frequency oscillator for providing:

a phase shifter drive signal for modifying the intensity of the pattern of the interference beam at the detector, and

a reference signal;

a phase sensitive amplifier for comparing the reference signal from the oscillator with the electrical carrier signal from the optical detector to provide a time varying null signal on the phase shifter drive signal, the drive signal causing a nulling shift in phase in the reference beam to maintain the interference beam at maximum intensity; and

a signal analyzer for monitoring the time varying nulling signal to correlate the phase of the optical radiation with the scanning means and provide an electrical output signal describing phase as a function of position in the test beam.

3,857,637

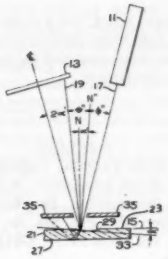
SURFACE DISTORTION ANALYZER

Robert J. Obenreder, Coraopolis, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 10, 1973, Ser. No. 322,574

Int. Cl. G01n *21/32*

U.S. Cl. 356—120 **4 Claims**



1. A method of sensing concave and convex portions in a surface of a piece of glass, comprising the steps of:

directing a beam of light from a light source toward the surface of the piece of glass at an oblique angle of incidence to reflect a portion of the beam of light from the surface toward position sensing means as a reflected beam of light and passing the remaining portion of the beam of light through the surface as a transmitted beam of light wherein the angle of incidence is selected to minimize the effect of the glass movement toward and away from the position sensing means on the reflected beam;

preventing the transmitted beam of light from impinging on the position sensing means;

displacing the piece of glass and the beam of light relative to one another at a preselected constant speed to scan the surface of the piece of glass along a scan path;

observing relative positions of the reflected beam of light with the position sensing means as the beam of light moves along the scan path to sense concave and convex portions in the surface of the piece of glass along the scan path wherein the relative positions of the reflected beam of light are observed as a function of time; and

computing a flatness profile of the surface of the piece of glass (1) to determine if the curvature of the surface of the piece of glass along the scan path is concave or convex and (2) to determine the reflected optical power of the glass at each point along the scan path wherein the reflected optical power is proportioned to the magnitude of the local curvature of the surface at each point along the scan path.

3,857,638

APPARATUS FOR REGULATING THE POSITION OF A MACHINE COMPONENT

Michael Bory, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Nov. 30, 1973, Ser. No. 420,553

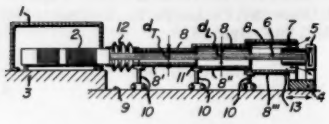
Claims priority, application Switzerland, Dec. 11, 1972, 17975/72

Int. Cl. G01b *11/26*; **G01j** *1/20*

U.S. Cl. 356—153 **8 Claims**

1. An apparatus for regulating the position of a movable machine component with the aid of a light beam, especially a

laser light beam, comprising a light source arranged at a stationary machine component for producing a light beam and a beam detector arranged at said movable machine component



for detecting the light beam, and a protective telescopic tube for protecting the light beam between the light source on said stationary machine component and the beam detector on said movable machine component.

3,857,639

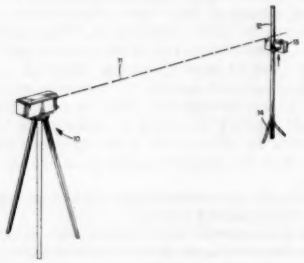
ELECTRONIC TARGET

Mark T. Mason, South Lyndeboro, N.H., assignor to New Hampshire Ball Bearings Inc., Peterborough, N.H.

Filed Dec. 21, 1973, Ser. No. 427,372

Int. Cl. G01b *11/26*; G01j *1/20*

U.S. Cl. 356—156 **4 Claims**



1. A target for detecting a plane of reference defined by a scanning light beam comprising:

a. a housing containing a guide way for a pole;

b. an electrically driven friction roller in said housing for propelling said housing along a pole in said guide way;

c. optical means mounted in said housing for acquiring a scanning light beam; and,

d. electronic means including indicators in said housing connected for halting said electrically driven friction roller and operating said indicators responsive to acquisition of a scanning light beam by said optical means.

3,857,640

IDENTIFICATION MEANS FOR AN ARTICLE AND METHOD AND APPARATUS FOR RECORDING SAME

Edward Hilbon, 1012 Field Rd., Union, N.J. 07083

Filed July 19, 1973, Ser. No. 380,765

Int. Cl. G09f *3/00*

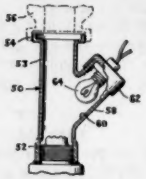
U.S. Cl. 356—162 **22 Claims**

1. An identification means for an article such as an engine and the like, comprising:

a. an element formed as an integral part of said article,

b. said element having a fixed portion and a portion removable by random breaking, and

c. means forming an identification surface on said fixed portion specific to each associated article on the area



exposed by breaking said removable portion from said fixed portion.

3,857,641

OPTICAL MEASURING APPARATUS

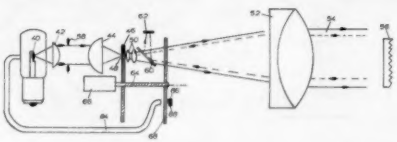
Ernst Gass, Stuttgart, Germany, assignor to Firma Erwin Sick Optik-Electronik, Waldkirch, Germany

Filed Jan. 4, 1974, Ser. No. 430,703

Claims priority, application Germany, Jan. 23, 1973, 2303040

Int. Cl. G01n *21/26*

U.S. Cl. 356—207 **10 Claims**



1. An optical measuring apparatus, particularly a smoke or visibility meter, comprising, in combination, a light source; an optical system operatively associated with said light source and forming a light beam traversing a measuring distance; a reflex-reflector in the path of said light beam and having said light beam impinging thereon; a beam splitter positioned in the path of rays of said light beam and inclined with respect to the optical axis of said light beam to direct light, reflected by said reflex-reflector, laterally of said optical axis as a measuring light flux; a photoelectric detector positioned in the path of measuring light flux directed laterally of said optical axis by said beam splitter; and reflector means operable to intersect said light beam between said beam splitter and said reflex-reflector to produce a reference light flux, from said light source, impinging on said detector in alternation with said measuring light flux, said reflector means including a reflector surface movable periodically to intersect the path of rays of said light beam and reflecting the rays in a substantially diffuse manner to said beam splitter.

3,857,642

FLEXIBLE OR UNIVERSAL COUPLING MEANS

Bernard F. Miller, Corning, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y.

No Drawing. Filed Feb. 26, 1973, Ser. No. 336,088

Int. Cl. F16b *9/02*

U.S. Cl. 403—57 **4 Claims**

1. Means for universally coupling first and second members together, for imparting movement from one of said members to the other thereof, comprising:

a thrust block element;

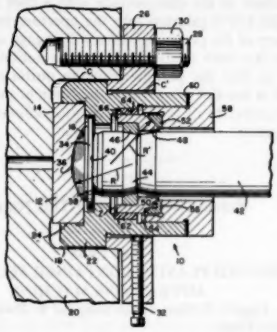
an adapter element;

one of said elements having a convex surface formed thereon; and the other of said elements having a concave surface formed thereon;

said elements having said surfaces in contacting engagement, defining a universally movable interface;

said interfaced elements being interpositioned between said first and second members, effecting a continuous abutting engagement of surfaces of said members with surfaces of said elements; and

a clamping assembly, engaging a portion of one of said members and fastened to the other of said members, clamping said elements and members together, locking said elements and members in continuous contacting and abutting engagement and preventing said elements and members from moving apart and separating from each other; wherein



said clamping assembly includes a threaded sleeve, a plurality of rings enclosed by said sleeve and disposed about said portion of said one member, said one member having a surface deformation formed thereon and one of said rings is in engagement with said deformation, a lock nut threadedly engaged with said sleeve and forcefully clamping said rings together and locking said one ring against said surface deformation, and a resilient annulus radially interpositioned between said sleeve and another of said rings, said annulus having surfaces thereof in resiliently compressed engagement with surfaces of said sleeve and said another ring, resiliently limiting said one member in a slidable, radial movement only relative to said other member;

said another ring encloses said one ring; and

said plurality of rings includes a seat ring interpositioned between said another ring and said nut.

3,857,643

OPTICAL RAIL SYSTEM

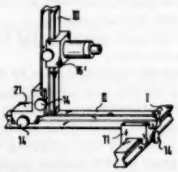
Arpad Bardocz, Rumannstr. 57, 8000 Munich 40, Germany

Division of Ser. No. 126,562, March 22, 1971. This application Aug. 28, 1973, Ser. No. 392,218

Claims priority, application Germany, Apr. 3, 1970, 2016067

Int. Cl. F16b *7/04*

U.S. Cl. 403—63 **7 Claims**



1. A rail system comprising, in combination: a plurality of associated optical rails, each said rail having a uniform cross-sectional shape throughout its length, a first longitudinally extending flat bearing surface, a second longitudinally extending flat bearing surface parallel to said first surface and four flat locating surfaces on the sides of the rail, each locating surface extending towards a central plane of the rail perpendicular to the bearing surfaces from a line contiguous to the edge of a said bearing surface at an angle of about sixty degrees to the first bearing surface for cooperation with corresponding surfaces in grooves of couplings and optical carriers, said grooves also having surfaces for cooperating with the bearing surfaces, said rail cross section having a portion in a plane parallel to the bearing surfaces at a point adjacent to where the end of a locating surface is closest to the central plane with a width in the range of one third to one fourth of the width of a said first bearing surface, and wherein the combination further includes a coupling part joining two of said rails so that they are positioned in parallel planes at angles to each other, said coupling part having an first groove and a second groove identical in shape each receiving a rail portion, each groove having a bottom contacting a bearing surface and each groove having a side surface complemental to and contacting a said locating surface and a set screw urged against a locating surface and cooperating with each groove to **13** secure a said rail to said groove and an optical carrier having a groove identical in shape to the grooves of the coupling part receiving a portion of a rail and a set screw cooperating with said groove to secure said rail to said carrier for carrying an optical instrument.

3,857,644

SHAFT MOUNTING APPARATUS

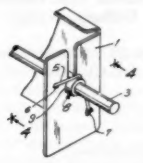
Yasushi Mikami, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1973, Ser. No. 403,079

Claims priority, application Japan, Nov. 1, 1972, 47-125418

Int. Cl. F16b *11/00*

U.S. Cl. 403—196 **8 Claims**



1. Apparatus for mounting a rotary shaft to a frame wherein the shaft is provided with a circumferential groove defining a neck portion and the frame is provided with a slot therein, said apparatus comprising a hollow cylindrdical bearing member adapted to rotatably receive the shaft therein and having a pair of notches separated by a bridge portion, said notches adapted to be aligned with the neck portion of the shaft when the shaft is received within said member, said member being adapted to be inserted into said slot with said bridge portion resting on the bottom of the slot and opposing edges of the slot extending through said notches into said groove, and a retaining spring mounted on the frame and containing said member to maintain the position of said member within said slot.

3,857,645

LEADER WITH A LINE CONNECTOR

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020

Continuation-in-part of Ser. No. 128,015, March 25, 1971, Pat. No. 3,717,907. This application July 24, 1972, Ser. No. 274,307

Int. Cl. F16g *11/00, 11/02*

U.S. Cl. 403—206 **11 Claims**

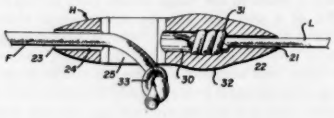
1. A connector in combination with the ends of two pliable lines with the diameter of the first line being approximately

one-half greater than the diameter of the second line, such as a fly line and a leader, and comprising:

a tubular connecting member constructed of slightly stretchable material and having an axial passageway extending through it and a side opening intersecting the passageway;

said passageway at one end of the member forming a first passageway section which is slightly larger in cross section than the diameter of the said first line to receive the same;

said passageway at the other end of the member forming a second passageway section which has a cross section of a size sufficient to receive the second line;



said first passageway section extending to the side opening with the width of the side opening being at least as great as the diameter of the said first passageway section but not greatly exceeding that diameter, whereby the end of said first line may be threaded into the first passageway section, extended from the side opening, knotted and then pulled into the side opening with the knotted end being forced into the side opening by slight stretching of the connector and effecting a tight fit of the knotted end of said first line to the connector; and

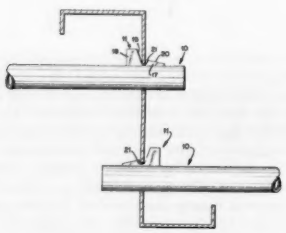
a locking means at the said second passageway section to securely lock the end of said second line into said second section.

3,857,646

SAG ROD END CONNECTION

Derek Esmond Warburton, Sale, England, assignor to Metal Sections Limited, Oldbury, Warley, Worcestershire, England

Filed Sept. 25, 1972, Ser. No. 291,602
Int. Cl. F16b *7/00*
U.S. Cl. 403—252 **1 Claim**



1. A sag rod for use in the construction of a roof for supporting purlins with respect to each other in which the purlin has an aperture, the dimensions of which are only slightly greater than the cross-sectional dimensions of the sag rod, said sag rod being hollow at least in its end portions and having in each of the end portions a latch member which projects laterally through an aperture formed in the side wall of the associated hollow end portion, said latch member including a base portion disposed within said hollow end portion and which is of larger dimensions than the dimensions of the aperture in the side wall so as to be retained within the hollow end portion, and laterally projecting longitudinally spaced first and second abutments of different heights integral with the base portion and which are disposed on the exterior of the associated hollow end portion, said first and second abutments defining therebetween an open-ended slot extending inwardly from the outer lateral edge of the latch member, said first abutment which is nearer the adjacent end of the sag rod having on its outer lateral edge a cam surface inclined to the longitudinal axis of the sag rod so that the end of the cam surface nearer to the adjacent end of the sag rod is also nearer to the longitudinal axis of the sag rod than the other end of the cam surface, and resilient means located within the associated hollow end portion engaging the base portion of the latch member for urging the latch member into the position projecting laterally through the aperture, yet permitting the latch member to move temporarily inwardly with respect to the aperture on engagement of the cam surface with a roof purlin, whereby when the rod is inserted into the aperture in the purlin, the periphery of the purlin aperture will engage said cam surface to urge the latch member against the action of the resilient means so that the periphery of the purlin aperture can be located in the slot after which the resilient means returns the latch member to its initial position to connect the purlin and rod together.

3,857,647

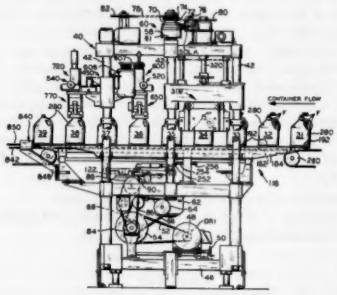
Patent Not Issued For This Number

3,857,648

MOLDED PLASTIC CONTAINER SECONDARY OPERATIONS MACHINE

Noel B. Eggert, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 93,069, Nov. 25, 1970, Pat. No. 3,716,910.
This application Nov. 29, 1972, Ser. No. 310,392
Int. Cl. B23b *39/06;* **B23b** *41/00*
U.S. Cl. 408—17 **7 Claims**



1. Apparatus for performing machining operations on plastic containers at a finishing station comprising

a. rotatable tool carrying means;

b. a housing for journally supporting said rotatable tool carrying means including means for rapidly advancing said housing toward said container until said housing reaches a tool engaging position and then advancing said housing at a tool working speed;

c. means for reciprocally moving said housing toward and away from a container;

d. means for gripping said container to hold said container in a position enabling a machining operation by tooling carried by said rotatable tool carrying means;

e. means responsive to movement of said housing toward a container for actuating said gripping means to grip and hold said container before tooling engages said container, and further responsive to movement of said housing away from said container for causing said gripping means to release its hold on said container after tooling is disengaged from said container, and

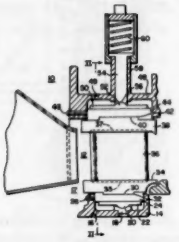
f. means for interrupting said tool working speed advance of said housing to cause machining cuttings to be shorter.

3,857,649

INLET VANE STRUCTURE FOR TURBINES

Richard J. Schaller, Ambler, Pa., and Stephen D. Leshnoff, Highland Park, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 9, 1973, Ser. No. 387,069
Int. Cl. F01d *9/00, 9/02, 25/26*
U.S. Cl. 415—200 **3 Claims**



1. An inlet nozzle for a gas turbine comprising:

a radially inner shroud ring, a radially outer shroud ring coaxial with said radially inner shroud ring, a plurality of radially extending ceramic vane structures disposed between said radially inner and said radially outer shroud rings, each of said vanes being secured at one end to said radially inner shroud ring by an inner support structure, each of said vanes being secured at its other end to said radially outer shroud ring by an outer support structure, said inner support structure comprising a ceramic end cap, an insulator pad and an inner shoe plate disposed on said inner shroud ring,

said outer support structure comprising a ceramic end cap, an insulator pad, an outer shoe plate and a bias producing means,

said outer shoe plate being movable connected to said bias producing means, said bias producing means reacting cooperatively with said outer ring, wherein said bias producing means provides a compressive force directed radially inwardly on each of said ceramic structures,

said bias producing means consists of a rod-like plunger cooperatively associated with a spring member to induce a compressive force upon said ceramic structure, said plunger having a hemispherical surface on its inner end to provide a movable interface with respect to said outer shoe which has a mating hemispherical surface.

3,857,650

VANED ROTOR FOR GAS TURBINES

Rodolfo Cerrato, Turin, Italy, assignor to FIAT Societa per Azioni, Turin, Italy

Filed Oct. 23, 1973, Ser. No. 408,335
Claims priority, application Italy, Oct. 23, 1972, 70323/72
Int. Cl. F01d *5/24*
U.S. Cl. 416—218 **6 Claims**

1. In a vaned rotor for a gas turbine, of the type comprising:

a rotor having a metal rotor body,

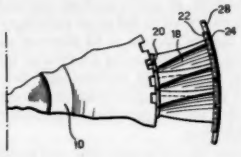
a plurality of ceramic vanes, and

means for locating the vanes on the periphery of the metal body,

the improvement wherein,

- each vane has a transverse part at the radially outer end thereof, said transverse parts of said vanes together forming a support surface, and

a coil of substantially inextensible filaments, wound around said support surface, said coil acting to absorb all the



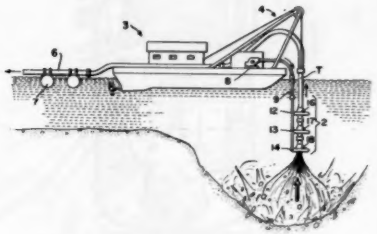
radial forces exerted on said vanes of said rotor during use.

3,857,651

PUMPING UNITS FOR CYCLONIC ELEVATOR

Anthony I. Bruno, 4333 Dawson Ave., San Diego, Calif. 92115

Continuation of Ser. No. 155,750, June 23, 1971, abandoned.
This application July 26, 1973, Ser. No. 382,823
Int. Cl. F04f *5/42*
U.S. Cl. 417—171 **5 Claims**



1. Pumping units for a cylindrical cyclonic elevator tube in which fluid under pressure from a source thereof has communication therewith via a plurality of circumferentially spaced jet orifices set at inwardly directed angles gradually increasing from a minimum angle with respect to the central axis of the tube of not less than 5° and circumferentially directed compound angles of inclination correspondingly gradually decreasing in inclination from a maximum angle circumferentially for ejecting vortically directed jets of fluid under pressure upwardly through the cyclonic elevator to effect transportation of comminuted and/or fluid material through such tube; each said pumping unit comprising in combination:

a. a tubular section having an axial length substantially equal to its radius;

b. a frusto-conical section having its truncated end secured to the lower end of said tubular section and its flared sides extending therefrom a distance comparable to the length of said tubular section;

c. a transition ring having its outer periphery secured to the flared open end on said conical section and an inner periphery of a diameter comparable to said tubular section and having such circumferentially spaced jet orifices formed therebetween from the bottom to the upper surface thereof such that the inwardly directed angle of the minimum angle of such jet orifices converges with a projection of the inner surface of the flared side walls of said conical section, slightly above the truncated end of said conical section;

d. an intermediate tubular section having a diameter equal to that of said tubular section and secured opposite thereto to the bottom surface of said transition ring with its internal periphery flush with the inner periphery of said transition ring;

e. a manifold for each of said pumping units comprising an annular tube, of C-shaped cross section radially thereof and of a diameter vertically from its annular crown to its annular tail slightly greater than the vertical thickness, top to bottom, of said transition ring and having its annular crown secured to the outer periphery of the flared end of said conical section at its plane of connection to said transition ring and having its annular tail extending horizontally toward said intermediate tubular section and secured thereto for providing an annular chamber about the outer exposed periphery and bottom surface of said transition ring;

f. and means for communicating said annular chamber with the source of fluid under pressure.

3,857,652

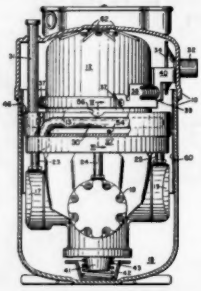
INTERNAL LIQUID REFRIGERANT TRAP FOR HERMETIC COMPRESSORS

Paul G. Thayer, Staunton, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 1, 1974, Ser. No. 438,932

Int. Cl. F04b *39/12*

U.S. Cl. 417—312 **5 Claims**



1. In a multi-cylinder refrigerant compressor of the vertical crankshaft type having a hermetically sealed outer shell, radially extending cylinder heads in the lower portion of the shell with discharge tubes extending upwardly to an annular discharge muffler encircling the compressor motor, a suction gas inlet in the upper portion of said shell, and an oil sump in said shell, a liquid refrigerant trap system comprising:

a liquid refrigerant reservoir mounted on top of and in heat exchange relation with said muffler and being upwardly-open at least in that portion thereof underlying said suction gas inlet to receive liquid refrigerant dripping from said inlet, said reservoir extending for a distance equal to at least half a circle;

said reservoir including means defining a drain opening located above at least one of said cylinder heads and toward the radially inner side of said reservoir, said drain opening being of a size to restrict passage of liquid refrigerant therethrough while permitting passage of oil therethrough.

3,857,653

FUEL INJECTION PUMPING APPARATUS

Dorian Farrar Mowbray, Burnham, England, assignor to C.A.V. Limited, Birmingham, England

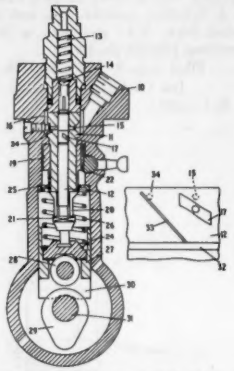
Filed July 23, 1973, Ser. No. 381,589

Claims priority, application Great Britain, July 21, 1972, 34166/72

Int. Cl. F04b *7/04, 39/10*

U.S. Cl. 417—494 **3 Claims**

1. A fuel injection pump having a plunger located within a bore, a pumping chamber formed by said bore, an end of said plunger forming a wall of said chamber, a circumferential barrier groove formed on said plunger a first inclined groove formed in said plunger and axially spaced with respect to the end of said barrier groove, a second inclined groove formed in the plunger substantially diametrically opposite said first inclined groove and extending from said barrier groove towards said end of the plunger but terminating short thereof,



said first inclined groove having a control edge, said first inclined groove communicating with a spill port located within a wall of said bore during inward movement of the plunger, and an additional port formed in the wall of said bore, said second inclined groove communicating with said additional port during inward movement of the plunger to allow fuel which has collected in the barrier groove to escape through said additional port.

3,857,654

ADJUSTABLE DIAMETER STATOR FOR EXCENTRIC HELICAL SCREW PUMP

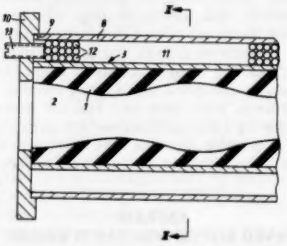
Max Streicher, Wangen/Allgau, Germany, assignor to Fordertechnik Streicher GmbH, Schlosshof, Germany

Filed Jan. 22, 1973, Ser. No. 325,748

Claims priority, application Germany, Jan. 21, 1972, 2202763; Sept. 5, 1972, 2243479

Int. Cl. F04c *1/06*

U.S. Cl. 418—48 **33 Claims**



1. An adjustable stator assembly for a helical screw pump comprising in combination:

a stator sleeve of a resiliently yielding material such as rubber and the like having a longitudinal cavity defined by a twin helix inside which may be received, in a known manner, an eccentrically rotating helical screw;

a plurality of parallel segmental slats of a hard, highly pressure resistant material arranged on the circumference of the stator sleeve, the slats extending longitudinally over at least a major portion of the sleeve length; and

means for radially compressing the stator sleeve through the application of radial pressure to said slats, the compressing means including:

a plurality of roll bodies bearing against the slats from the outside while being rollable thereon in at least one direction, each slat being thereby biased radially inwardly on at least two longitudinally spaced points;

means for transmitting compression forces between the roll bodies contained in any given radial plane through the stator assembly; and

means for adjusting the radial compression on said slats.

3,857,655

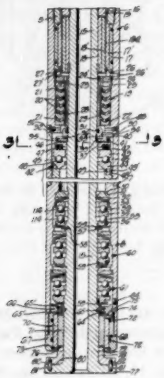
WEAR SLEEVES FOR SEALED BEARINGS

John E. Tschirky, Long Beach, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 354,954, April 27, 1973,. This application Aug. 6, 1973, Ser. No. 385,836

Int. Cl. F04c *1/06*

U.S. Cl. 418—48 **6 Claims**



6. A fluid motor which includes a rotor, a stator, and a stator housing, a shaft connected to said rotor for rotation by said rotor, a housing for said shaft connected to said stator housing, a fluid inlet into said stator housing, and a fluid outlet from stator into said shaft housing, thrust bearings mounted in said shaft housing between said shaft housing and said shaft, seal mounted in said shaft housing between said thrust bearing and said fluid outlet, a sleeve mounted at one end thereof on said shaft for rotation with said shaft, a seal between said end and said shaft, said sleeve being spaced from and unsupported by said shaft between said first named seal and said free end, a packing between said sleeve and said housing.

3,857,656

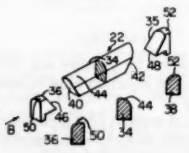
APEX SEAL FOR A ROTARY INTERNAL COMBUSTION ENGINE

Yoshikazu Ishikawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed May 17, 1973, Ser. No. 361,266

Int. Cl. F01c *19/02*

U.S. Cl. 418—120 **1 Claim**



1. An apex seal for a rotary internal combustion engine having a rotor with a plurality of apices, which comprises: a central apex seal element transversely disposed in each apex of the rotor having a different oblique end section formed at each end thereof, said central apex seal element having a curved top portion extending along the length thereof; and two end apex seal elements longitudinally aligned with the central apex seal element, each having an oblique section sealingly and obliquely slidable on the adjacent oblique section of said central apex seal element, each said end apex seal element having a curved top portion extending along the length thereof, the center of the radius of curvature of the curved top portion of said central apex seal element and the center of the radius of curvature of one of said end apex seal elements being disposed on the opposite sides of and approximately equidistant from the bisector of the apex.

3,857,657

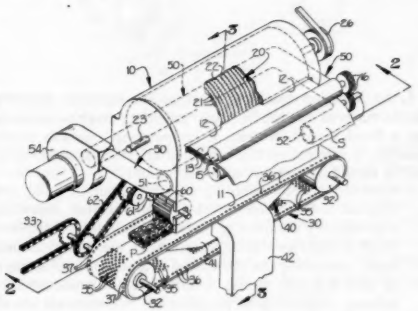
FIBERIZING AND PAD FORMING APPARATUS

Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 415,010

Int. Cl. B29j *5/00*

U.S. Cl. 425—80 **11 Claims**



1. Apparatus for fiberizing a sheet of wet-pressed, pulp fibers into individual fibers and forming individual, spaced-apart pads of such fibers; said apparatus comprising:

generally enclosed, stationary chamber means having an open bottom and a slot in an upper portion thereof to receive a sheet of wet-pressed pulp fibers;

rotatably mounted and driven fiberizing means mounted in the upper portion of said chamber means for contacting the sheet of wet-pressed pulp fibers and fiberizing the sheet into substantially individual fibers;

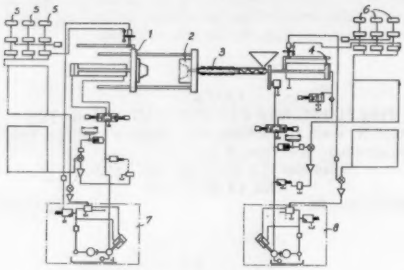
driven, longitudinally moving conveyor belt means having longitudinally-spaced groups of small perforations therein along the length thereof corresponding to the desired configuration and spacing of the fiber pads being formed and being positioned for movement along said open bottom end of said chamber means directly below said fiberizing means and cooperating with said chamber means for forming an enclosed pad forming area in a lower portion of said chamber means and for receiving the fiberized fibers on its upper surface and conveying the fiberized fibers out of said chamber means; and

stationary vacuum means positioned at the lower surface of said belt means and directly below said chamber means for creating a vacuum through said groups of perforations in said moving belt means for causing said fibers to be pulled to said groups of perforations to form individual, spaced-apart pads on said moving belt means over said groups of perforations and within said lower portion of said chamber means for being conveyed by said belt means out of said chamber means after formation thereof.

3,857,658
APPARATUS FOR INJECTOR MOLDING

Laszlo Muzsnay, Amiens, France, assignor to Societe anonyme dite: Plastimonde, Paris, France

Continuation of Ser. No. 82,495, Oct. 20, 1970, abandoned, Continuation of Ser. No. 748,530, July 19, 1968, abandoned. This application May 25, 1973, Ser. No. 364,059
Claims priority, application France, Aug. 3, 1967, 67.116752; July 10, 1968, 68.158661
Int. Cl. B29f *1/04*
U.S. Cl. 425—145 1 Claim



1. An injection moulding machine for injection moulding plastic material and the like, said moulding machine comprising a fixed mould portion, a cooperating movable mould member, a movable piston-operated injection system for injecting moulding material into said mould,

a hydraulic system including a variable output pump and adapted to move said movable mould member, means for continuously monitoring the actual velocity of displacement of said movable mould member, means for continuously comparing the monitored velocity of displacement of said movable mould member with a predetermined velocity displacement program for the movable mould member, and means for adjusting the velocity of displacement of the movable mould member to maintain said actual velocity thereof at a value substantially equal to said predetermined velocity of displacement thereof, said movable mould member displacement velocity adjusting means including a servo-valve for controlling the output of said pump,

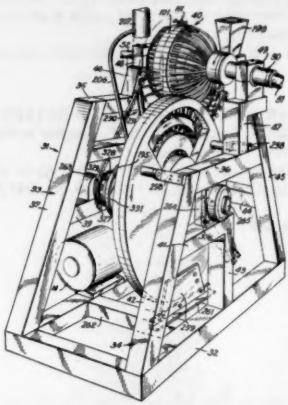
a second hydraulic system including a second variable output pump and adapted to move said movable piston, means for continuously monitoring the actual velocity of displacement of said movable piston, means for continuously comparing the monitored velocity of displacement of said movable piston with a predetermined velocity displacement program for the movable piston, and means for adjusting the velocity of displacement of the movable piston to maintain its actual velocity at a value substantially equal to said predetermined velocity of displacement thereof, said movable piston displacement velocity adjusting means including a second servo-valve for controlling the output of said second pump.

3,857,659
SEED CONTAINING PELLET FORMING EQUIPMENT

Philip B. Knapp, Lynbrook, N.Y., assignor to Minnesota Mining & Manufacturing co., St. Paul, Minn.

Division of Ser. No. 164,748, July 21, 1971, Pat. No. 3,775,034, which is a division of Ser. No. 855,289, Sept. 4, 1969, Pat. No. 3,640,428. This application Nov. 14, 1973, Ser. No. 415,794
Int. Cl. A01c *1/06*; B30b *11/12*
U.S. Cl. 425—145 14 Claims

13. The combination set forth in claim 12 in which each of said discharge outlets comprises a passageway in said distributor means, each of said passageways having an inlet, a gate member movable between a position closing the inlet to one of said passageways to a position opening said inlet, actuating

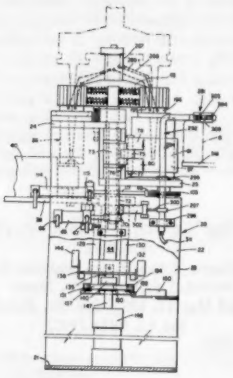


means controlling said gate member to move the latter between said two positions, said actuating means being controlled by the means controlled by the movement of said seed through said discharge tube into said feed means.

3,857,660
INJECTION-BLOW MOLDING MACHINE

Joseph C. Flynn, Bridgeton, and Walter Panas, Millville, both of N.J., assignors to Wheaton Industries, Millville, N.J.

Filed Sept. 17, 1973, Ser. No. 397,842
Int. Cl. B29d *23/03*
U.S. Cl. 425—242 B 15 Claims



1. A machine adapted for reliably and efficiently forming hollow containers by an injection blow molding process, said machine comprising

A. a central vertical support post including indexing means to rotate said post and elevation means to raise and to lower said post,

B. a transfer head mounted on said post including

i. a first and a second core rod mounting means each adapted to receive core rods to be downwardly ex-

tended therefrom at two diametrically opposite core rod positions on said head, and

ii. split neck ring mold mounting means at each of said core rod positions, said mounting means adapted to permit split neck ring molds mounted thereon to move toward and away from one another,

C. split neck ring mold actuating means consisting of

i. biasing means urging said split mounting means at each position toward one another and

ii. opening means consisting of air actuated pistons adapted to overcome said biasing means and to force said split mounting means at either position away from one another upon the admission of pressurized air thereto,

D. a parison mold adapted to communicate through an injection nozzle with a source of viscous plastic material and a means for injecting said material into said parison mold, said parison mold further being positioned and adapted to receive a core rod and a split neck ring mold at said first of said core rod positions by vertical downward movement of said transfer head,

E. a blow mold at a location diametrically opposite that of said parison mold, said blow mold being split along its length and hinged to permit separation of the two mold halves, said mold being positioned and adapted to receive a core rod at said second of said core rod positions by vertical downward movement of said transfer head,

F. a first, and second pressurized air delivery means adapted to sealingly engage corresponding air inlets in said transfer head when said transfer head is lowered,

G. said corresponding air inlets consisting of

i. a first pair of air inlets in said transfer head adapted to engage said air delivery means when a core rod mounted on said first core rod mounting means is disposed in said blow mold, and

ii. a second pair of air inlets in said transfer head adapted to engage said air delivery means when a core rod mounted on said second core rod mounting means is disposed in said blow mold,

H. air passageways within said head for delivering pressurized air from

i. one of the first pair of air inlets to the interior of a core rod mounted on said first core rod mounting means,

ii. the other of the first pair of air inlets to the air actuated piston of said actuating means at said first core rod position,

iii. one of the second pair of air inlets to the interior of a core rod on said second core rod mounting means, and

iv. the other of the second pair of air inlets to the air actuated piston of said actuating means at said second core rod position,

I. said elevation means consisting of means

i. to raise said head from a seated position with said core rods in said molds and said pressurized air delivery means in engagement with said inlets, to a raised position with the bottom of said core rods above said molds, and

ii. to lower said head from its raised position to its seated position, and

J. said indexing means being operative with said head in its raised position to index said head through an arc of 180° about said post.

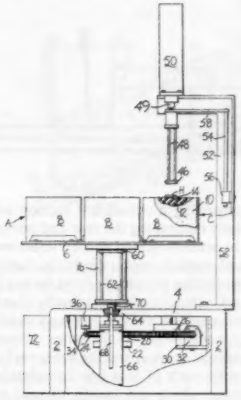
3,857,661

MANUFACTURE OF CERAMIC WARE

Frederick Arthur Turnock, and Robert Gater, both of Stoke-on-Trent, England, assignors to Service (Engineers) Limited, Staffordshire, England

Filed Oct. 12, 1973, Ser. No. 405,810
Int. Cl. B29c *17/12*
U.S. Cl. 425—289 **4 Claims**

1. A deseaming machine for ceramic cup handles comprising a support for sponge material or the like, opposed walls of which sponge material define a passageway therein which has a cross-sectional configuration conforming to the profile shape of a cup handle, a pusher member shaped to conform to the cross-sectional configuration of the passageway, means for moving the pusher member so that the pusher member pushes a cup handle placed on the sponge material at the entrance to the passageway into the passageway so that the cup handle is carried through at least part of the passageway



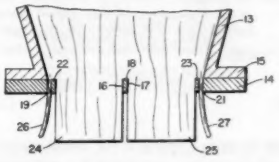
rubbing against the opposed walls so that seams on the cup handle are substantially removed, an ejector member shaped to conform to the cross-sectional configuration of the passageway, and means for moving the ejector member so that it pushes the cup handle back out of the passageway and withdraws to leave the handle on the sponge material so that the cup handle is carried back through the part of the passageway through which it was pushed by the pusher member and can be readily unloaded from the sponge material.

3,857,662

VARIEGATED SOAP APPARATUS

Robert Marie Ratz, Embourg, Belgium, assignor to Colgate-Palmolive Company, New York, N.Y.

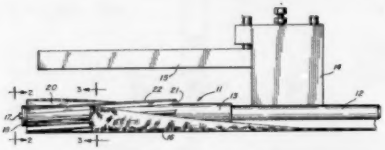
Filed June 27, 1973, Ser. No. 374,080
Int. Cl. B29c *17/10*
U.S. Cl. 425—296 **3 Claims**



1. Apparatus for producing variegated soap billets comprising a plodder having a discharge end, an extrusion die mounted on and communicating with said discharge end, said extrusion die being formed from a flat unitary plate having at least four extrusion openings disposed in side by side relationship, each of said openings being rectangular in configuration and having the same dimension in one direction, said four openings being separated by three lands of substantially the same width, the inner two of said openings being of a size suitable for the extrusion of side by side billets of soap, the outer two of said openings being in the form of slots through which a surface layer of each of said billets is extruded simul-

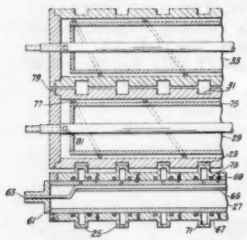
taneously with said billets, all of said extrusion openings being defined by parallel walls extending through said unitary plate.

3,857,663
MANDREL FOR ROUNDING DOUGH
Harold T. Atwood, 14152 Irving Ave., Dolton, Ill. 60619
Filed Mar. 20, 1974, Ser. No. 452,679
Int. Cl. A21c *11/00*
U.S. Cl. 425—308 **2 Claims**



1. A mandrel comprising a cylindrical section and a conveyor belt substantially embracing the rear end portion of said cylindrical section in predetermined spaced relationship to its outer circumferential surface, said cylindrical section having a plurality of fins projecting outwardly from its outer circumferential surface and extending longitudinally thereof in an elongated spiral path, each of said fins having a width substantially equal to the spacing between the outer circumferential surface of said cylindrical section and the inner surface of said conveyor belt whereby each of said fins completely severs a piece of dough moved along the length of said cylindrical section by said conveyor belt.

3,857,664
FORMING APPARATUS FOR MULTIPLE STREAM SHAPING
Keith G. Johnson, Pittsburgh, and Anthony Paul Limbach, Dowingtown, both of Pa., assignors to Arco Polymers, Inc., Glenolden, Pa.
Filed Nov. 28, 1973, Ser. No. 419,786
Int. Cl. B29d *7/10*
U.S. Cl. 425—327 **5 Claims**



1. A roll forming apparatus for simultaneous shaping of a plurality of extrudates comprising in combination,

a. a first roll having a plurality of projections on its surface;

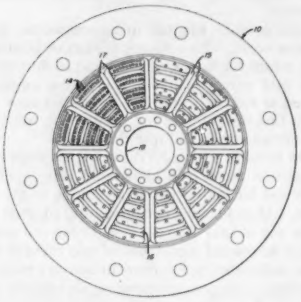
b. a second roll having a plurality of grooves in its surface;

c. said first and second rolls being located adjacent one another such that the projections of said first roll intermesh with the grooves of said second roll;

d. the height of said projections beyond the first roll being less than the depth of said grooves in the second roll such that when said projections intermesh with said grooves, a plurality of confined passages of predetermined configuration are defined between the tops of said projections and the bottoms of said grooves; and

e. said projections being formed by a plurality of self-aligning bronze rings coaxially mounted over a smooth steel roll, such that as the steel roll expands or contracts, said rings may slide coaxially to remain aligned with the grooves of said second roll.

3,857,665
POLYSTYRENE EXTRUDER DIE PLATE
Frank Kennedy, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Apr. 11, 1973, Ser. No. 350,289
Int. Cl. B29f *3/04*
U.S. Cl. 425—378 **11 Claims**



1. An improved die plate for the continuous extrusion of molten thermoplastic resin, having a downstream face, an upstream face and connecting means for underwater die face pelletization devices, characterized by the downstream face being the downstream edge of a relatively thin metal web,

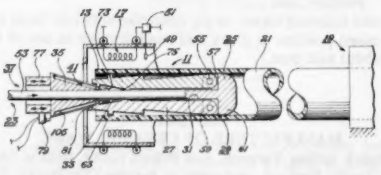
said web containing a plurality of orifices for extrusion of thermoplastic resin into pellet form,

a means integral with said web to resist deflection of said web, said means including:

radial ribs extending from the upstream side of said web to the upstream face of said die plate, and

annular ribs extending from the upstream side of said web to a position intermediate of said web and said upstream face of said die plate, said annular ribs intersecting said radial ribs, and said orifices being disposed between said annular ribs.

3,857,666
APPARATUS FOR BELLING ENDS OF CONDUIT OR THE LIKE
Louis H. Barnett, 3631 Encanto Dr., Fort Worth, Tex.
Filed Apr. 9, 1973, Ser. No. 349,293
Int. Cl. B29c *17/00*
U.S. Cl. 425—393 **8 Claims**



1. In apparatus for at least semi-automatically belling a first end of thermoplastic conduit for conformingly receiving a second end of conduit, including:

a. heating means for at least locally heating said first end of said conduit;

b. support means for supporting said conduit; and

c. insert means for inserting an insertable mandrel for expanding said end to thereby bell said end to have a predetermined set of internal dimensions for receiving therewithin said second end of conduit having a predetermined set of external dimensions that conformingly mate with said internal dimensions:

The improvement comprising said mandrel being an expandable insertable mandrel having a ridge protruding about its periphery for defining a groove having any predetermined cross sectional shape on the interior of said first end for receiving a seal means intermediate said first end and said second end; said expandable insertable mandrel being connected with said insert means for insertion within said first end of said conduit without requiring elastic response of softened walls of said first end of said conduit in contracting around said ridge; said mandrel being expansible after insertion within said first end of said conduit for belling said first end, and collapsible after said belling and before withdrawal from said first end; said mandrel being connected with said insert means also for withdrawal from said first end of said conduit; said expandable mandrel comprising:

d. a plurality of at least three elongate pieces having a predetermined peripheral radius of curvature that is the same as said second end of said conduit; said plurality of pieces of said expandable mandrel having respective portions of a ridge extending peripherally thereabout for forming said groove in the belled first end for receiving a seal means for sealing against said second end that is subsequently inserted thereinto; said pieces having a radius in a retracted position during insertion and withdrawal less than the radius of said first end of said conduit before belling, and being expansible after insertion within said first end to a radius in a fully expanded and belling position that is greater than said radius of said first end for belling said first end and forming a sealing groove therewithin; said pieces having a normal discontinuity when expanded into their fully expanded position;

e. mounting means holding said plurality of pieces assembled in said retracted position and adapted for allowing radially outward expansion thereof into said belling position after insertion within said first end of said conduit;

f. a central bore having a first frustoconically shaped bore opposite said mounting means for receiving a swage means;

g. a central shaft disposed in said central bore and extending out of said first frusto-conically shaped bore;

h. swage means disposed on said central shaft and movable longitudinally thereof for expanding said plurality of pieces radially outwardly into said belling position; said swage means having a frusto-conical shape adapted to conformingly fit said first frusto-conically shaped bore when fully seated thereinto for forming the belled first end;

i. forcing means for forcing relative movement between said swage means and said pieces after insertion within said first end of said conduit to fully seat said swage means in and withdraw said swage means from said first frusto-conically shaped bore for collapsing said mandrel before withdrawal; said forcing means being connected with said swage means and said mounting means;

j. smoothing means for smoothing out the interior surface of the final belled end and removing irregularities caused by said normal discontinuities of the expansibly mounted pieces when they are expanded outwardly into their fully expanded position by the fully seated swage means; and

k. retraction means for effecting retraction of said pieces radially inwardly as said swage means is withdrawn from its fully seated position;

such that said mandrel can be expanded to define a bell and a groove of any cross sectional shape, even square, since said conduit does not have to be slipped over said expansible mandrel when fully expanded.

3,857,667

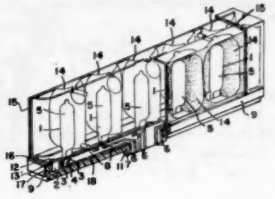
PHOTOFLASH LAMP ARRAY HAVING SUPPORT STRUCTURE ON BASE

John J. Vetere, Danvers, Mass., and Donald E. Armstrong, Williamsport, Pa., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Oct. 23, 1973, Ser. No. 408,464

Int. Cl. F21k *5/02*

U.S. Cl. 431—95 **11 Claims**



1. Support structure in a multilamp flash unit; said unit including a printed circuit board having a depending contact tab for insertion into an edge connector assembly, a plurality of flashlamps connected to said printed circuit board, and a base having an upper surface supporting said printed circuit board and a through-slot therein through which said contact tab extends and projects from the other side thereof; said support structure comprising:

a pair of flexible bifurcated posts projecting from the upper surface of said base and located on opposite sides of said through-slot, each of said posts having a longitudinally extending slot aligned with said through-slot and within which said printed circuit board is received and seated, and each post having means toward the outer end thereof projecting from both sides of the slot therein which resiliently engage opposite sides of the printed circuit board seated in said slot, each projecting means having a flat surface bearing against a side of the printed circuit board, whereby said printed circuit board is fixedly located on said base and the position of said contact tab projecting through said through-slot is maintained in a predetermined dimensional relationsnip with respect to said base.

3,857,668

FLAMELESS CATALYTIC COMBUSTION OF HYDROCARBON IN POROUS SINTERED STONES

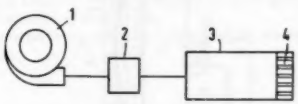
Christian Koch, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 21, 1970, Ser. No. 56,885

Claims priority, application Germany, Aug. 2, 1969, 1939535

Int. Cl. F23d *3/40*

U.S. Cl. 431—7 **10 Claims**

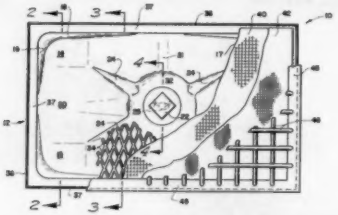


1. A process for the flameless combustion of gases in porous sintered stones, which comprises passing a mixture of hydrocarbon with air or oxygen through a highly porous sintered stone traversed by openings, said sintered stone containing a catalyst selected from the group consisting of nickel and platinum, said catalyst being doped with uranium oxide.

3,857,669
CATALYTIC HEATER HEAD

Jay N. Smith, Wichita, Kans., and Robert I. Schantz, Burien, Wash., assignors to Impala Industries, Inc., Wichita, Kans.

Filed Sept. 2, 1971, Ser. No. 177,399
Int. Cl. F23d *13/14*
U.S. Cl. 431—328 **8 Claims**

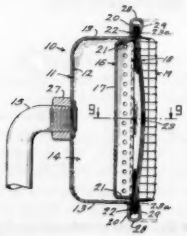


1. A catalytic heater head for use with gaseous fuels, comprising:
   a gas impervious rectangular back pan shaped to define a shallow gas diffusion chamber with an open front side;
   a fibrous layer of catalytic-coated mass mounted on the front side of said back pan;
   a gas emitter head centrally located in said back pan and including at least one orifice located to emit gas in a directed stream;
   means to supply gas to said emitter head; and
   said back pan being formed with separate reservoirs in each of the four corners thereof and channel means radiating outward from the gas emitter head terminating in at least one of the reservoirs, the volume of the channel means being substantially smaller than the volume of the reservoirs, the channel means being substantially aligned with the gas stream from the emitter head whereby the flowing gas is partially confined as it travels upward through the channel means into the respective reservoir and ridge means separating each of the reservoirs partially restricting the flow of gas between the reservoirs.

3,857,670
RADIANT BURNER

Arthur R. Karlovetz, Fremont, and Eugene W. Placek, Middleburg Heights, both of Ohio, assignors to International Magna Corporation, Cleveland, Ohio

Filed Mar. 29, 1973, Ser. No. 346,071
Int. Cl. F23d *13/14*
U.S. Cl. 431—329 **10 Claims**

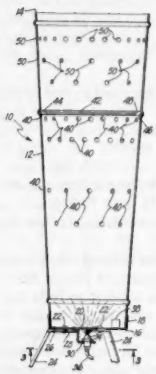


1. A radiant burner comprising
   a. a hollow cup-shaped body having a continuous peripheral wall extending forwardly and defining an open ended chamber,
   b. an outwardly extending planar chamber flange on the forward end of said peripheral wall,
   c. a diffuser having a planar web with a regular pattern of uniform size perforations therein providing an open area substantially less than the area of said planar web,
      said web extending across said body in a plane parallel to said chamber flange,
      said diffuser having a peripheral forwardly extending spacing flange and an outwardly extending marginal edge on the front end of said spacing flange, and being spaced forwardly from the rear of said cup-shaped body,
      the surface of the edges of said diffuser lying in heat transfer contact against said chamber flange,
   d. a primary screen consisting of at least two contiguous layers of substantially identical mesh material and
   e. an open mesh reverberator grid both extending across the open end of said chamber,
      the layers of said primary screen being welded together at the center thereof and at a plurality of spaced points around the edges thereof,
      the edges of said grid and said screen overlying the marginal edges of said diffuser and said chamber flange in heat transferring stacked relationship,
   f. a lip on the outer edge of said chamber flange that is folded over against the edge surface of said reverberator grid for retaining said diffuser, said screen and said grid in the open end of said body and
   g. a combustible gas inlet into said chamber behind said diffuser.

3,857,671
ORCHARD HEATER

Willis T. Cox, 13827 N. 108th Dr., Sun City, Ariz. 853551

Filed Feb. 8, 1973, Ser. No. 330,512
Int. Cl. F23d *15/02*
U.S. Cl. 431—352 **4 Claims**



1. An orchard heater which includes:
   an elongated stack having the shape of a frustrum of a cone, said stack having an uncovered upper end and a lower end, said upper end being of longer diameter than said lower end, a cover having a centrally located opening covering the lower end of said stack,
   leg means for supporting said stack vertically a support located beneath said opening in said cover,
   a fuel nozzle located on said support so as to be capable of directing a spray of unburned fuel through said opening without such fuel contacting said cover,

the size of said opening being sufficiently small so that the air entering said stack through said opening during the operation of said heater is insufficient to sustain complete combustion of the fuel emitted from said nozzle,

an imperforate carburetor plate located across the interior of said stack between said ends of said stack, said carburetor plate having an outer edge uniformly spaced from the interior of said stack,

first air holes located in said stack between said carburetor plate and said upper end of said stack,

a plurality of second air holes located in said stack beneath said carburetor plate, said second air holes being spaced from said cover,

said carburetor plate being the only obstruction located within the interior of said stack and being located between said ends of said stack so that partial combustion of fuel supplied through said nozzle will occur beneath said carburetor plate causing said stack and said carburetor plate to be heated, such heating resulting in the heating of fuel and air within said stack beneath said carburetor plate,

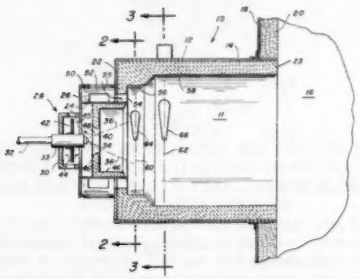
said carburetor plate serving to distribute a mixture of air, unburned fuel and combustion products so that said mixture flows around the periphery of said carburetor plate and then upwardly and outwardly from said upper end of said stack past said first air holes so as to burn in a flame extending from said upper end of said stack, and the air necessary to support combustion of the fuel burned in said heater entering said heater through said opening and said first and said second air holes.

3,857,672

TRI-FUEL BURNER FOR PROCESS GASES

Robert D. Reed, and Hershel E. Goodnight, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Dec. 26, 1973, Ser. No. 427,730
Int. Cl. F23d *15/02*
U.S. Cl. 431—353 **4 Claims**



1. A burner for the forced burning of low heat value gases comprising:

a. a cylindrical metal housing with horizontal axis and refractory lining, said housing closed at a first end and adapted to be attached to a furnace wall at a second end, said refractory lining having three steps of diameter;

b. combustion air inlet means for the longitudinal introduction of combustion air at a first diameter through an annular port in said closed end;

c. fuel gas introduction means for the tangential introduction of fuel gas under pressure at a second, larger diameter, axially displaced from said combustion air inlet means; and

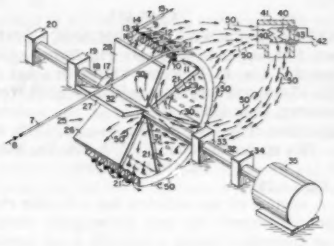
d. lean gas introduction means for the tangential introduction of low heat value gas at a third, larger diameter, displaced axially from said fuel gas introduction means, said third diameter continuing for the remaining length of said housing.

3,857,673

APPARATUS FOR HEAT TREATING CONTINUOUS WIRE AND ROD

Everett Howard Andrus, Rt. No. 4, Watertown, Wis. 53094

Filed Mar. 8, 1974, Ser. No. 449,365
Int. Cl. F27b *9/28*
U.S. Cl. 432—59 **5 Claims**



1. In apparatus for treating a continuous strand the combination of:

a chamber,

means for continuously introducing said strand into said chamber at a preselected rate and means for withdrawing said strand continuously from said chamber at the same rate,

a rotatable hollow drum within said chamber,

said drum rotatable on an axis whereby a plurality of turns of said strand may be wound around said drum,

said drum having two ends,

the interior of said drum being the space within said drum between said ends,

said drum having a plurality of passages extending therethrough which provide communicating passages between the interior of said drum and the exterior of said drum,

means to blow gas through said passages from the interior of said drum to the exterior of said drum,

said means to blow gas through said passages comprising a rotatable gas impeller means rotatable on an axis,

said gas impeller means rotatable on the axis on which said drum rotates,

said gas impeller means disposed at least partly within said interior of said drum,

said apparatus being provided with heating means to heat said gas.

3,857,674

HAIR COLOURANTS

Ernst Ludwig Forsthoff, Schenfeld, and Rudolf Vogl, Bad Segeberg, both of Germany, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 203,048, Nov. 29, 1971, abandoned. This application May 3, 1973, Ser. No. 356,869

Claims priority, application Luxembourg, Dec. 4, 1970, 62178

Int. Cl. A61k *7/12*

U.S. Cl. 8—10.2 **4 Claims**

1. A hair colourant composition having a pH between 8 to 10 comprising a mixture of dyestuffs and a carrier therefor the mixture of dyestuffs comprising a 1,2- or 1,3-diaminobenzene substituted in the positions para to the amino groups by identical substituents selected from the group consisting of C_1 to C_3 alkyl groups and halogen atoms and 2,5-diamino toluene or a salt thereof in a molar ratio of less than 1:1.

3,857,675

MIXTURES OF TWO CHROMOGENIC COMPOUNDS

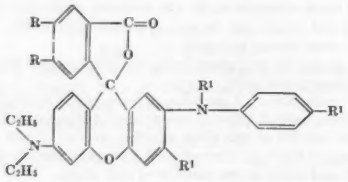
Helmut Schwab, 1544 Academy Pl., Dayton, Ohio 45406; Chao-Han Lin, 81 Patterson Village Dr., Apt. 3, Dayton, Ohio 45419, and Troy Eugene Hoover, 2108 Westtown Dr., Kettering, Ohio 45440

Continuation of Ser. No. 89,751, Nov. 16, 1970, abandoned. This application Mar. 7, 1973, Ser. No. 338,703

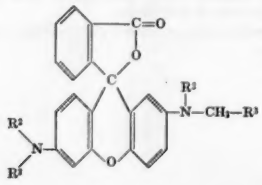
Int. Cl. D06p *1/42*

U.S. Cl. 8—25 **3 Claims**

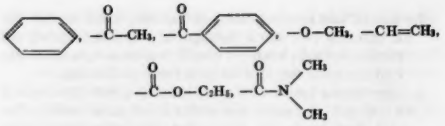
1. A mixture of two colorless but colorable chromogenic compounds wherein the first chromogenic compound is a fluoran compound having a generally green appearance and exhibiting two light absorption peaks-one in the range of 400 to 500 millimicrons and another in the range of 550 to 650 millimicrons—in its colored form and wherein the second chromogenic compound exhibits a single absorption peak in the range of 500 to 600 millimicrons in its colored form;—the mixture, additionally, consisting essentially of a first chromogenic compound represented by the formula:



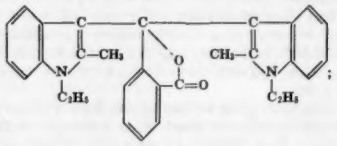
wherein each R is H or NO_2 and each R^1 is H, CH_3, or C_2H_5; or

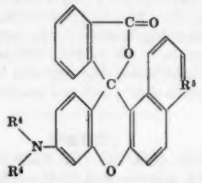


wherein each R^2 is H, CH_3 or C_2H_5 and R^3 is H,

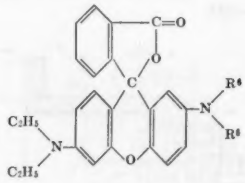


or CH_3 and a second chromogenic compound represented by the formula:





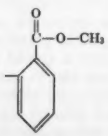
wherein each R^4 is H, CH_3, or C_2H_5 and R^5 is C or N;

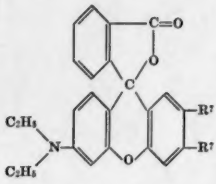


wherein one R^6 is

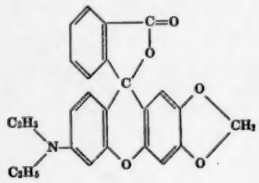
and the other R^6 is H,

CH_3, C_2H_5 or





wherein each R^7 is H, Cl, CH_3, C_2H_5 or —S-CH_3; or



wherein the mole ratio of the first chromogenic compound to the second chromogenic compound ranges from 1:5 to 5:1 and said mixture on reaction with an electron accepting material of the Lewis acid type, exhibits a neutral-colored form.

3,857,676
PROCESS FOR THE PRINTING AND CONTINUOUS FIXING OF DISPERSE DYESTUFFS ON POLYESTER, CELLULOSE-TRIACETATE, CELLULOSE-2½-ACETATE AND MIXTURES THEREOF

Erich Feess, Lorsbach, Taunus; Kurt Roth, Hofheim, Taunus, and Gunther Trapp, Frankfurt, Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Main, Germany

Filed June 30, 1972, Ser. No. 267,960

Claims priority, application Germany, July 3, 1971, 2133161

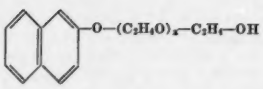
Int. Cl. D06p *1/82*

U.S. Cl. 8—21 **8 Claims**

1. A process for printing and continuously fixing prints of disperse dyestuffs on fibrous materials of polyester, cellulose-triacetate and cellulose-2½-acetate and mixtures thereof or mixtures with wool, natural or regenerated cellulose fibers or with other synthetic fibers, which process comprises: using a printing paste containing, as fixing auxiliary, 25 to 60 grams per kilogram of printing paste of compounds of the formula

$$R_1—CO—(OC_2H_4)_n—O—C_4H_8—O—(C_2H_4O)_m—OC—R_2 \quad (1)$$

wherein $R_1—CO—$ and $R_2—CO—$ each represents the acyl radicals of linear or branched alkane- or alkene monocarboxylic acids with from 12 to 22 carbon atoms and *n* and *m* each is a number of from 4 to 12, alone, or in combination with oxethylated naphtols of the formula (2)



wherein *x* is zero or a number of from 1 to 4.

3,857,677
METHOD OF STERILE PACKAGING

Francis C. Moore, and Leon R. Perkinson, both of Indianapolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 112,762, Feb. 4, 1971, Pat. No. 3,725,003, which is a continuation-in-part of Ser. No. 873,786, Nov. 4, 1969, Pat. No. 3,618,283. This application Mar. 22, 1973, Ser. No. 343,974The portion of the term of this patent subsequent to Apr. 3, 1970, has been disclaimed.

Int. Cl. A61l *13/00;* **B65b** *55/18, 55/14*

U.S. Cl. 21—58 **7 Claims**

1. A method of sterile packaging comprising the steps of partially filling a container with a solution of a standard antibacterial agent having an available iodine concentration within the range of 0.0012 to 3.0 percent; then sealing said container to provide a gas space above said solution within the sealed container; and thereafter heating said container and its contents to a temperature substantially below the boiling point of said solution and at a pressure of about one atmosphere until the interior surfaces of said container above and below the liquid level, and the entire contents of said container, are sterilized.

3,857,678
METHOD FOR DETERMINING TOXICITY OF PHYTOTOXINS IN PLANTS

Lowell A. Klepper, Lincoln, Nebr., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 21, 1973, Ser. No. 334,343

Int. Cl. A01n *9/00;* **C09k** *3/00;* **G01n** *33/00*

U.S. Cl. 23—230 R **3 Claims**

1. A method for determining toxicity of phytotoxins in plants comprising the steps of:

a. preparing an aqueous reaction mixture containing plant tissue, a phytotoxin, a compound selected from the group consisting of surfactants, ethanol, acetone, and isopropanol, and KNO_3 in amounts sufficient to produce detectable amounts of nitrite ion when treated as described in steps (b) and (c), infra, and KH_2PO_4 in an amount sufficient to buffer the reaction mixture at a pH of about 7.0;

b. vacuum infiltrating the reaction mixture;

c. incubating the reaction mixture at a temperature and light intensity sufficient to promote plant growth for a time sufficient to produce detectable amounts of nitrite; and

d. analyzing the incubated reaction mixture for the presence of nitrite ion.

3,857,679
CRYSTAL GROWER

Worth P. Allred, West Covina, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Feb. 5, 1973, Ser. No. 329,746

Int. Cl. B01j *17/06, 17/18*

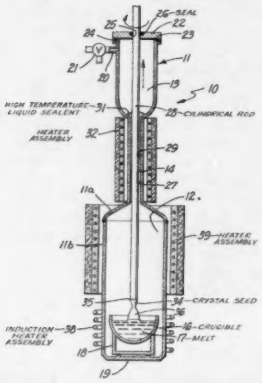
U.S. Cl. 23—273 SP **5 Claims**

1. A furnace assembly for the growth of an uncontaminated arsenide compound crystal of predetermined composition, including:

a gas-tight housing, said housing having a first chamber adapted for the growth of crystals from a melt by the crystal pull technique, a second chamber and a neck

interconnecting the two chambers along the vertical axis of said housing, said first chamber adapted to support a melt of the arsenide compound for crystal growth, said second chamber having a circular aperture coaxial with said axis and a port for the evacuation and admission of gas out of and into said housing, said neck having a circular bore coaxial with said axis and communicating with said chambers;

a cylindrical rod passing through said aperture into said housing coaxial with said axis, the lower end of said rod extending into said first chamber, said rod journaled in said bore and adapted for rotation about and vertical movement along said axis for the growth of a crystal from the melt;



means external of said housing for rotating and vertically moving said rod for crystal growth;

inert sealant means for sealing said first chamber from said second chamber, said means being stored as a solid at ambient temperatures in said second chamber prior to the operation of said assembly, and said means sealing the space between said rod and the wall of said bore as a liquid at elevated temperatures, said means adapted to seal said space at elevated temperatures while said rod is in motion;

means external of said housing for heating said sealant means; and

means external of said housing for heating the melt of the arsenide compound.

3,857,680

CATALYST CARTRIDGE

Paolo Della Porta; Tiziano A. Giorgi; Angelo Cantaluppi; Bruno Ferrario, and Paolo Montalenti, all of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Filed Nov. 1, 1971, Ser. No. 194,445

Claims priority, application Italy, Nov. 3, 1970, 31307/70

Int. Cl. B01j *9/04;* **B21d** *53/02;* **B23p** *15/26*

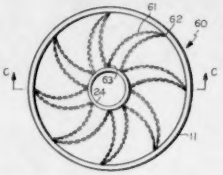
U.S. Cl. 23—288 K **10 Claims**

1. a catalyst structure comprising:

A. a thin sheet having two opposite sides and being formed of a metal of a given hardness,

B. a great plurality of catalyst particles having a hardness greater than said given hardness and being partially embedded in a surface on each of said two opposite sides of said sheet,

C. said sheet being folded to form a plurality of smaller sheets joined at edges of said smaller sheets to adjacent smaller sheets to form radially disposed segments of said smaller sheets which are all arcuately bent in the same direction, whereby alternate edges of said smaller sheets form outer edges and



D. a mass situated thermally adjacent to the outer edges of the sheets for conductive exchange of heat with said smaller sheets through said edges.

3,857,681

COPPER FOIL TREATMENT AND PRODUCTS PRODUCED THEREFROM

Charles B. Yates, and Adam M. Wolski, both of Edgewater Park, N.J., assignors to Yates Industries, Inc., Bordentown, N.J.

Continuation-in-part of Ser. No. 168,755, Aug. 3, 1971, abandoned. This application Jan. 5, 1972, Ser. No. 215,648

Int. Cl. B23p *3/00;* **C23b** *5/50, 5/52*

U.S. Cl. 29—195 **29 Claims**

1. A method of treating copper foil comprising applying to the foil at least two separate electrodeposited copper treatment layers to form a matte surface, the first such layer in contact with said foil comprising a nodular powdery copper electrodeposit which has been deposited from an acidic aqueous electrolyte separate from that used to form said copper foil, said electrolyte containing about 20–30 grams per liter of copper (calculated as Cu) at a cathode current density of about 150–300 amps./ft^2; the second such layer comprising a gilding layer which is not nodular in structure but which conforms to the configuration of the first layer so as to reduce the powder transfer characteristics of said first layer, said second layer having been deposited from an acidic aqueous electrolyte separate from that used to form said copper foil and said first layer, said electrolyte consisting essentially of about 50–100 grams per liter of copper (calculated as Cu) and sulfuric acid at a cathode current density of about 100–300 amps./ft^2; and coating said matte surface with a layer of zinc.

3,857,682

HIGH TEMPERATURE RESISTIVE AND DRY LUBRICATED FILM SURFACES

Gerald W. White, 5835 Elm Lawn St., Dallas, Tex. 75080

Filed Feb. 7, 1973, Ser. No. 330,294

Int. Cl. B32b *15/04*

U.S. Cl. 29—195 **28 Claims**

1. A high temperature resistive film build-up deposited on substrate material, with a plurality of film materials with film material atoms mechanically driven into underlying material atomic lattice in phase zones of atoms of adjoining materials through use of a high particulate energy level film material deposition ion plating process, with at least two of the materials of the materials of said substrate and said plurality of film materials being metal based materials; and with at least one film material a hardened refractory material film deposited by a high particulate energy level ion plating process.

3,857,683

PRINTED CIRCUIT BOARD MATERIAL INCORPORATING BINARY ALLOYS

Richard N. Castonguay, Los Angeles, Calif., assignor to The Mica Corporation, Culver City, Calif.

Filed July 27, 1973, Ser. No. 383,088
Int. Cl. B32b *15/04*
U.S. Cl. 29—195 **33 Claims**

1. A novel printed circuit board material in the form of a layered stock comprising an insulating support, at least one layer of electrical resistance material adhering to said support, and a layer of a highly conductive material adhering to the resistance material and in intimate contact therewith, said layer of electrical resistance material being selected from the group consisting of chromium-antimony containing from about 13 – 74% by weight antimony, chromium-manganese containing from about 10–80% by weight manganese, chromium-phosphorus containing from about 6–52% by weight phosphorus, chromium-selenium containing from about 14–65% by weight selenium, chromium-tellurium containing from about 21–75% by weight tellurium, cobalt-antimony containing from about 18–72% by weight antimony, cobalt-boron containing from about 2–36% by weight boron, cobalt-germanium containing from about 6–60% germanium, cobalt-indium containing from about 18–71% by weight indium, cobalt-molybdenum containing from about 10–65% by weight molybdenum, cobalt-phosphorus containing from about 6–52% by weight phosphorus, cobalt-rhenium containing from about 25–95% by weight rhenium, cobalt-ruthenium containing from about 16–94% by weight ruthenium, cobalt-tungsten containing from about 15–72% by weight tungsten, cobalt-vanadium containing from about 9–70% by weight vanadium, iron-vanadium containing from about 9–65% by weight vanadium, nickel-antimony containing from about 15–74% by weight antimony, nickel-boron containing from about 2–36% by weight boron, nickel-chromium containing from about 9–40% by weight chromium, nickel-germanium containing from about 6–60% by weight germanium, nickel-indium containing from about 18–71% by weight indium, nickel-molybdenum containing from about 10–65% by weight molybdenum, nickel-phosphorus containing from about 5–50% by weight phosphorus, nickel-rhenium containing from about 75–95% by weight rhenium, nickel-vanadium containing from about 9–72% by weight vanadium, and palladium-molybdenum containing from about 9–40% by weight molybdenum.

3,857,684

CORROSION-RESISTANT DOUBLE-COATED STEEL MATERIAL

Naomi Kubu, Nagoya, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Sunto-gun, Shizuoka Prefecture, Japan

Filed Dec. 22, 1971, Ser. No. 211,087
Claims priority, application Japan, May 10, 1971, 46-30959
Int. Cl. B23p *3/10;* **B32b** *15/18*
U.S. Cl. 29—196.5 **3 Claims**

1. In steel materials having corrosion-resistant double-coating consisting of inner and outer two layers, an improved corrosion-resistant double-coated steel material characterized in that said inner layer is a zinc coating and said outer layer is a tin-predominant coating formed in a fusion-bonded state on said inner layer.

3,857,685

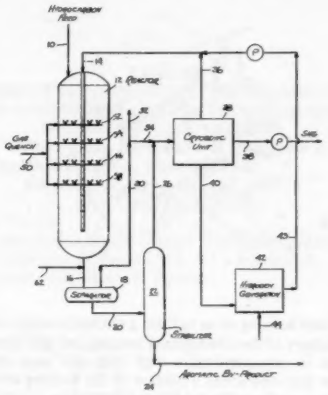
SYNTHETIC NATURAL GAS PRODUCTION USING A PLUG-FLOW REACTOR

Leon M. Lehman, Brooklyn, N.Y., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Filed Dec. 20, 1972, Ser. No. 317,037
Int. Cl. C01b *2/14;* **C10g** *13/30*
U.S. Cl. 48—213 **8 Claims**

1. A process for the production of synthetic natural gas having a heating value between 800 and 1,000 BTU's from a hydrocarbon distillate which boils between **200°** and **900°F** which comprises:

a. combining said distillate with less than 50 percent of the hydrogen required for the hydrocracking of the distillate;
b. feeding said distillate-hydrogen mixture as a vapor to the upper portion of a reaction zone at **800°** to 1,200°F;
c. thermally hydrocracking said mixture in the upper portion of said reaction zone;
d. quenching said mixture to maintain temperature control with a quench selected from the group consisting of hydrogen, steam, nitrogen and recycle gas derived from the reaction zone effluent;



e. feeding the remainder of the hydrogen required to the reaction zone so as to be distributed throughout the remaining portion of the reaction zone to complete the thermal hydrocracking of said distillate;
f. removing the hydrocracked product;
g. quenching said product to prevent further hydrocracking;
h. passing said quenched product to a separator; and
i. recovering a synthetic natural gas product therefrom.

3,857,686

GLYCOL-BUTYROLACTONE MIXTURES

John L. Arnold, and Roscoe L. Pearce, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 8, 1971, Ser. No. 113,164
Int. Cl. B01d *53/02*
U.S. Cl. 55—29 **4 Claims**

1. In the process of cooling natural gas to remove the condensible fraction wherein a hydrate inhibitor is utilized, the improvement of utilizing as said inhibitor a mixture consisting essentially of at least one glycol selected from the group of ethylene glycol, diethylene glycol, propylene glycol, dipropylene glycol, triethylene glycol and tetraethylene glycol and butyrolactone in a weight ratio of **95:5** to **5:95**, respectively.

3,857,687

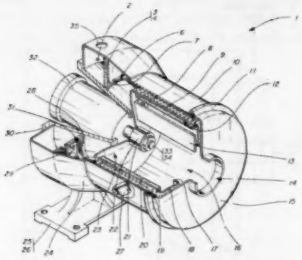
CENTRIFUGAL FILTER

Earle M. Hamilton, 12 S. Parkway Rd., Monmouth, N.J. 06413, and William Cook, Rt. No. 1, Westbrook, Conn. 06498

Filed Oct. 9, 1973, Ser. No. 404,268
Int. Cl. B01d *50/00*
U.S. Cl. 55—337 **9 Claims**

1. A filter for removing aerosol particles from a gaseous stream, comprising a rotatable drum having a plurality of circumferentially disposed perforations, a first circular base portion and a second circular base portion with inlet means, means for rotating the drum, a housing for said drum having

a cylindrical wall portion, the cylindrical portion curving inward toward the downstream end, a first circular end portion with inlet means for the gaseous stream concentric with said drum inlet means, the longitudinal axis of said housing being coaxial with the longitudinal drum axis, an exhaust chamber having outlet means for the gaseous stream and inlet means for filtered gaseous stream comprising a filtering means, the inlet means corresponding to the outlet means for the housing, an annular lip portion extending from the inner wall of the exhaust chamber toward the end of the cylindrical



wall of said housing so as to form a circumferential slot along the periphery of the downstream housing end and a collection chamber in communication with said slot, said collection chamber disposed about a portion of the housing and having an outlet drain for collected filtered aggregates, venting means communicating with the exhaust chamber said venting means extending into the collection chamber, whereby aerosol particles entering into the drum are subjected to centrifugal forces and while passing through the perforations grow in size, are deposited on the cylindrical housing walls, skimmed off through the slot to the collection chamber for collection.

3,857,688

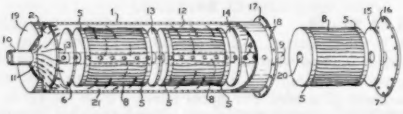
LEAD FILTER

John P. Wisnewski, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 192,848, Oct. 27, 1971, abandoned. This application Mar. 27, 1974, Ser. No. 455,468

Int. Cl. B01d *25/00*

U.S. Cl. 55—483 **4 Claims**



1. A fiber glass filter comprising:

a gas impermeable cylindrical housing,

a first end plate mounted within said housing and spaced from the inner surface therof acting as a baffle at one end thereof,

a second end plate mounted in closing relationship to the opposite end of said housing,

a centrally disposed, apertured, hollow cylindrical support member traversing the substantial length of said housing, extending to the exterior of said housing through said second end plate, and being supported by said first and second end plates,

a filtration zone, having therein glass paper, said glass fiber paper being mounted concentrically within and spaced from the inner surface of said housing on said apertured support member,

sealing end caps on said filter paper,

means for sealing said gas fiber paper, and said first and second end plates into a unitary structure which causes gases introduced into said filter to pass through said glass fiber paper,

the interior of said housing and the exterior of said glass fiber paper providing a gas space,

means for introducing gases into said housing and said gas space, and

means for discharging gases from said housing through said support member.

3,857,689

ION EXCHANGE PROCESS FOR MANUFACTURING INTEGRATED OPTICAL CIRCUITS

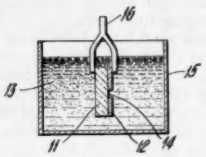
Ken Koizumi, Hyogo; Toru Sumimoto, Tokyo; Shigeo Matsushita, Tokyo, and Motaoaki Furukawa, Tokyo, all of Japan, assignors to Nippon Selfoc Company, Limited, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,452

Claims priority, application Japan, Feb. 2, 1972, 47-012472; Feb. 2, 1972, 47-012473; Dec. 28, 1971, 46-1147

Int. Cl. C03c *21/00, 17/06*

U.S. Cl. 65—30 **6 Claims**



1. A method for manufacturing an integrated optical circuit comprising:

forming a mask of a material selected from the group consisting of Ti, Ta, Nb, Nr, Cr and Al and the oxides of these metals on a transparent glass substrate containing monovalent positive ions, said mask defining a desired optical circuit pattern; and

promoting ion exchange within the substrate by contacting it with a molten salt containing monovalent positive ions which have a greater effect on the refractive index than the nonovalent positive ion in the substrate, whereby the refractive index of a portion of the substrate in the vicinity of the surface thereof which is not masked is made higher than the refractive index of the remainder of the substrate.

2. A method for manufacturing an integrated optical circuit comprising:

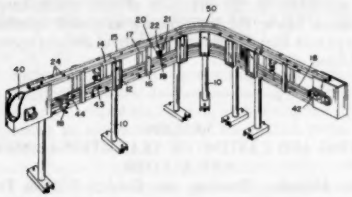
forming a two layered mask which defines a desired optical circuit pattern on a glass substrate containing monovalent positive ions, one layer of said mask consisting of an oxide of Ti, Ta, Nb, Zr, Cr, or Al and the other layer of said mask consisting of Ti, Ta, Nb, Zr, Cr, or Al; and

promoting ion exchange within the substrate by contacting it with a molten salt containing monovalent positive ions which have a greater effect on the refractive index than the monovalent positive ions in the substrate, whereby the refractive index of a portion of the substrate in the vicinity of the surface thereof which is not masked is made higher than the refractive of the remainder of the substrate.

3,857,690
HEATED CONVEYOR

Anthony T. Zappia, Indianapolis, Ind., assignor to Ball Brothers Service Corporation, Muncie, Ind.

Filed Oct. 9, 1973, Ser. No. 404,507
Int. Cl. C03b *29/04*
U.S. Cl. 65—274 **8 Claims**

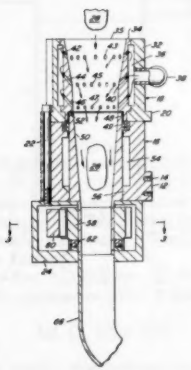


1. A conveyor comprising a trackway including parallel, hollow rails, means for supplying a gaseous fluid to the interior of said rails, an endless belt guided by said rails for travel therealong, cooperative engaging means for guiding said belt against lateral movement relative to said rails, and means for driving said belt, each of said rails being provided with port means for directing a stream of such fluid through said belt, said belt having openings therein through which such fluid passes.

3,857,691
GOB DISTRIBUTOR

Ronnie G. Jones, and John P. Daly, both of Winchester, Ind., assignors to Maul Bros. Inc., Millville, N.J.

Filed Oct. 9, 1973, Ser. No. 404,475
Int. Cl. C03b *5/30*
U.S. Cl. 65—303 **9 Claims**



1. A gob distributor cartridge for accelerating glass gobs in excess of gravity effect while the gobs are being delivered to molds in an I.S. machine comprising a rigid annular housing having an inlet end and an outlet end, the ID at the inlet end being greater than the ID at the outlet end, said housing being hollow and having an annular manifold, at least a portion of the inner peripheral surface of said housing converging in a direction from the inlet end toward the outlet end, said housing having a plurality of groups of circumferentially disposed flow passages extending from said manifold chamber to said portion of said surface of said housing, said passages being angled downwardly and converging toward said outlet end for discharge into said housing to progressively increase the pushing and centering effect of air from said passages on a gob as the gob moves through said housing, means defining an inlet to said manifold chamber, and the cross-section area of the passages having a sum which is less than the cross-section area of the inlet to the manifold chamber to maintain a positive pressure in the manifold chamber.

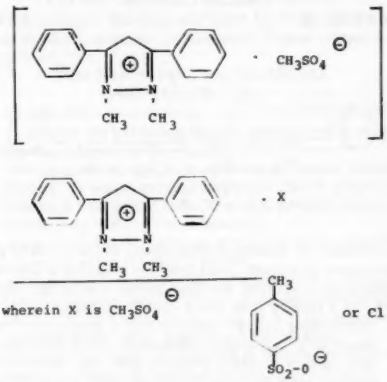
3,857,692
1,2-DIMETHYL-3,5-DIPHENYLPYRAZOLIUM SALTS AND 3,5-DIBROMO-4-HYDROXYBENZONITRILE HERBICIDAL COMPOSITIONS

Richard William Feeny, Hightstown, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 17, 1972, Ser. No. 307,671
Int. Cl. A01n *9/02, 9/22*
U.S. Cl. 71—92 **8 Claims**

1. A composition for the control of wild oats and broadleaf weeds comprising an inert carrier and a mixture of:

a. a pyrazolium salt of the formula:



and

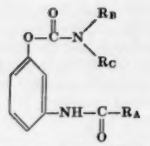
b. 3,5-dibromo-4-hydroxybenzonitrile wherein the composition is applied to the undesirable plants in sufficient amount to provide from 0.25 pound to 2.0 pounds per acre of pyrazolium cation and from 0.125 pound to 4.0 pounds per acre of 3,5-bromo-4-hydroxybenzonitrile.

3,857,693
ANILIDE CARBAMATES AS HERBICIDES

Kenneth L. Hill, Middleport, and Kenneth R. Wilson, Tonawanda, both of N.Y., assignors to FMC Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 496,159, Oct. 4, 1965, abandoned. This application Sept. 6, 1966, Ser. No. 577,191
Int. Cl. A01n *9/20*
U.S. Cl. 71—106 **31 Claims**

1. Herbicidal compositions comprising as an essential active ingredient an effective herbicidal amount of a herbicidal compound of the formula



where R_C is a hydrogen or lower alkyl and R_A and R_B are selected from the group consisting of cycloalkyl of 3 to 6 carbon atoms and aliphatic hydrocarbon containing up to about 6 catenated carbon atoms which may be substituted with chlorine or lower alkyl groups and a compatible carrier therefor.

3,857,694

PROCESS FOR BURNING HYDROCARBONS AND CRACKED PRODUCTS IN EXHAUST GASES FROM SINTERING MACHINES

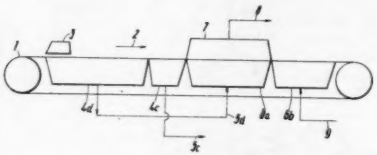
Fred Cappel, Sprendlingen; Jurgen Otto, Nieder-Eschbach; Siegfried Nikl, Frankfurt am Main, and Hans Rausch, Oberursel, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 14, 1972, Ser. No. 306,491

Claims priority, application Germany, Nov. 17, 1971, 2157044

Int. Cl. C21b *1/18*

U.S. Cl. 75—5 **4 Claims**



1. Process for burning hydrocarbons and/or cracked products present in exhaust gases from the sintering of iron oxide mixtures on a sintering machine having a sintering zone followed by a cooling zone which consists essentially of:

i. withdrawing exhaust gases having a temperature below about 80°C containing substantially all of the hydrocarbons and/or cracked products from the mixture being sintered via wind boxes positioned under a portion of the sintering zone which includes the point in said sintering zone where hydrocarbons and/or cracked products cease to be expelled from the mixture being sintered; and

ii. thereafter passing the exhaust gases withdrawn in step (i) directly through the hot sintered material in a first portion of the cooling zone which follows the sintering, the hydrocarbons and/or cracked products in said exhaust gas being burned in the hot sintered material.

3,857,695

PRODUCTION OF VANADIUM COMPOSITION

Milos Vojkovic, Libertyville, Ill., assignor to International Minerals & Chemical Corporation, New York, N.Y.

Filed June 21, 1973, Ser. No. 372,154

Int. Cl. C22c *27/00*, *35/00*

U.S. Cl. 75—.5 BB **9 Claims**

1. The method of producing a nitrided alloy containing about 50 to 82% by weight vanadium, together with minor amounts of iron, carbon, and nitrogen, and at most 1% by weight oxygen, comprising establishing an intimate admixture of a complex comprising vanadium pentoxide and an iron salt, together with finely divided carbon in an amount in the range of about 90 to 120% of the carbon stoichiometric to reduce the reducible metal values in said complex with the production of carbon monoxide, maintaining said admixture in an enclosed reaction zone for a period of about 20 to 120 minutes, at a temperature in the range of about 1250°C. to about 1350°C. in the presence of a reducing atmosphere of the group consisting of ammonia and mixtures of hydrogen and nitrogen having mole ratios in the range of 2:1 to 4:1, while continuously removing oxygen-containing gases from said reaction zone, whereby said vanadium pentoxide and iron salt are reduced and a nitrided alloy is formed, cooling the reduced admixture in the presence of said atmosphere to a temperature below the temperature at which spontaneous ignition of said alloy occurs on exposure to air, and recovering said nitrided alloy.

3,857,696

MELTING AND CASTING OF TRANSITIONAL METALS AND ALLOYS

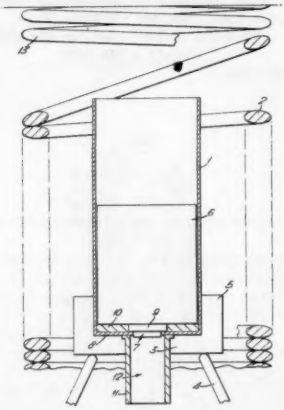
Kenneth Aldersley, Reading, and Gordon William Telford, Tadley, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed May 18, 1973, Ser. No. 361,490

Claims priority, application Great Britain, May 23, 1972, 24184/72

Int. Cl. C22d *7/04*

U.S. Cl. 75—10 R **10 Claims**



1. A method of melting and pouring as a molten charge a transitional metal or an alloy thereof comprising providing an unclad, thin-walled graphite crucible having a bottom opening therein, positioning a fusible metallic member substantially non-deleterious to the molten charge metal at the bottom of said crucible to obturate said opening, positioning a charge of said metal or alloy to be melted within said crucible above said member and rapidly heating said charge by electrical induction to a temperature above its melting temperature without substantially melting said member to thereby provide a pool of molten metal flowing onto the member and thereby melt a pour hole through the member through which the molten charge discharges from the crucible.

3,857,697

METHOD OF CONTINUOUSLY SMELTING A SOLID MATERIAL RICH IN IRON METAL IN AN ELECTRIC ARC FURNACE

Jacques Antoine, Longeville-les-Metz, and Pierre Vayssiere, Metz, both of France, assignors to Institut de Recherches de La Siderurgie Francaise, Germain-en-Laye, France

Filed Feb. 27, 1974, Ser. No. 446,424
Claims priority, application France, Mar. 5, 1973, 73.07711
Int. Cl. C22d 7/00; H05b 7/18
U.S. Cl. 75—11 5 Claims

1. A method of continuously processing a solid material rich in iron metal in an electric arc furnace having three electrodes energized with three-phase current, comprising the steps of

1. forming an incipient bath of the molten metal in the furnace,
2. controlling at least one of the characteristics of the electric current energizing the electrodes to produce
   a. a first voltage drop of relatively high value between two of the electrodes and the bath, this first voltage drop establishing long and strongly radiating arcs across the electrodes and the bath, and
   b. a second voltage drop of substantially lower value than the value of the first voltage drop between the third electrode and the bath, this second voltage drop establishing a short arc of limited radiation across the third electrode and the bath,
3. feeding the solid material substantially continuously into a zone of the furnace proximate the two electrodes establishing the long and strongly radiation arcs to melt the iron metal, and
4. continuously discharging the molten metal in a zone of the furnace proximate the third electrode establishing the short arc of limited radiation.

3,857,698

LIME COMPOSITION FOR BASIC OXYGEN STEEL-MAKING PROCESS

William Cecil Gilpin, Welbeck Woodhouse; Barry Bown, Retford, and Christopher Stelling Hedley, both of Worksop, all of England, assignors to Steetley (Mfg.) Limited, Gateford Hill, Worksop, England

Filed Nov. 6, 1972, Ser. No. 304,005
Claims priority, application Great Britain, Nov. 11, 1971, 52528/71
Int. Cl. C21c 1/00
U.S. Cl. 75—24 9 Claims

1. In the basic oxygen steel-making process, the improvement in combination therewith which comprises adding to the basic oxygen steel-making furnace as a basic slag-forming ingredient a preformed particulate composition consisting essentially of from 2 to 10% by weight of magnesia (MgO) based on the weight of the total lime addition to the steelmaking process, from 10 to 100% by weight of lime (CaO) based on the total lime addition to the steel-making process or at least 130% by weight of lime based on the weight of the magnesia content, whichever basis results in a greater lime content, iron oxide (Fe_2O_3) in an amount no greater than about 20% by weight based on the total lime addition, from 0 to 10% by weight of alumina (Al_2O_3) based on the total lime addition, from 1 to 10% by weight of manganese oxide (Mn_2O_3) based on the total lime addition and from 0 to 5% by weight of silica (SiO_2) based on the total lime addition.

3,857,699

PROCESS FOR RECOVERING NON-FERROUS METAL VALUES FROM REVERBERATORY FURNACE SLAGS

Paul R. Ammann, Reading; Jang Ho Kim, Chelmsford, and Michael J. Redman, Belmont, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,197
Int. Cl. C21b 3/04
U.S. Cl. 75—24 16 Claims

1. A process for recovering molybdenum values from molybdenum-bearing, ferruginous slags comprising

treating the slag in an extraction step by mixing the slag with a molten immiscible metal sulfide matte where the matte contains iron and sulfur in an iron to sulfur mole ratio range of nine to one to two to one at a temperature ranging between the slag melting point and 1600°C. to produce a slag treatment product;

separating the slag treatment product from the slag;

roasting the slag treatment product to produce a calcine;

leaching the calcine to dissolve the molybdenum values into a leach solution; and

recovering molybdenum from the leach solution.

3,857,700

PYROMETALLURGICAL RECOVERY OF COPPER VALUES FROM CONVERTER SLAGS

Paul R. Ammann, Reading, and Jang Ho Kim, Chelmsford, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,333
Int. Cl. C22b 15/00
U.S. Cl. 75—74 19 Claims

1. A process for extracting copper values from a copper-bearing slag comprising the steps of:

a. selecting a slag which in addition to copper contains about 7–30 weight percent magnetite, 36–49 weight percent total iron and at least 20 weight percent silica;

b. introducing the slag into a reactor;

c. maintaining the temperature of the slag in the reactor at a level at which the slag is molten;

d. adding a solid carbonaceous reductant to the slag in the reactor, the amount of reductant being sufficient to lower the oxygen potential of the slag to a level at which a copper bearing phase separates from the slag;

e. mixing the reductant into the slag in the reactor, while the slag is molten, with a liquid cooled, metal bladed, mechanical, rotating stirrer to reduce the slag, said stirrer being rotated at a speed sufficient to pump said reductant into the slag and keep it submerged in the slag long enough for it to decrease the oxygen potential and lower the soluble copper content of the slag to enable the formation of a copper bearing phase; and

f. separating a copper bearing phase from the slag.

3,857,701

SMELTING OF COPPER OXIDES TO PRODUCE BLISTER COPPER

Willard L. Hunter, and William A. Stickney, both of Albany, Oreg., assignors to The Unites States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sept. 26, 1973, Ser. No. 401,002
Int. Cl. C22b 15/00
U.S. Cl. 75—74 11 Claims

1. A process for reducing copper oxides to form blister copper which comprises:

heating in a furnace a first charge comprising copper oxides and a carbon reductant in an amount sufficient to provide at least 120% of the carbon stoichiometrically required to reduce the copper oxides contained in said first charge to copper metal to form a liquid slag depleted in copper and a liquid black copper phase;

tapping from the furnace a substantial portion of the copper depleted slag;

adding to the furnace, still containing the liquid black copper phase, a second charge comprising copper oxides and a carbon reductant in an amount less than 80% of the carbon stoichiometrically required to reduce the copper oxide contained in said second charge to copper metal and heating the charge to form a liquid slag rich in copper and a blister copper phase, and

tapping from the furnace a substantial portion of the blister copper.

3,857,702

ELECTROSLAG REFINING FLUX COMPOSITIONS AND PROCESS FOR MAKING SAME

Paul M. Corbett, Baltimore, Md., assignor to SCM Corporation, Cleveland, Ohio

Filed Oct. 26, 1971, Ser. No. 192,329

Int. Cl. C22d *7/00, 9/10*

U.S. Cl. 75—94 **10 Claims**

1. In a process for producing an electroslag refining flux composition from particulate batch materials which includes alumina, fluoride, and alkaline earth metal oxide, including calcium oxide, the improvement which comprises:

forming an agglomerated substantially homogeneous mixture of said batch materials at a heat reaction temperature of about 1,900°-2,400° F, but less than the fusion temperature of said batch materials, until a flux composition is formed having a substantially uniform fushion range of less than 150° F and containing less than about 1.5% by weight of free, uncombined calcium oxide.

3,857,703

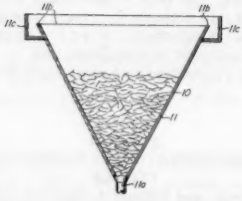
PROCESS OF EXTRACTING METALS FROM SOLUTIONS

Kenneth McGriffin, 2669 Flamingo Dr., Salt Lake City, Utah 84117

Filed Apr. 10, 1972, Ser. No. 242,665

Int. Cl. C22b *3/00*

U.S. Cl. 75—109 **1 Claim**



1. A process of extracting metals higher in the electromotive series than iron from solutions containing the same, comprising bringing such a solution into contact with a mass of precipitant that comprises a multitude of discrete ferrous metal leaves of substantially flat, irregular, splash-like formation having tentacles extending at random from an irregular body so as to provide randomly placed, irregular openings of various shapes and sizes, said leaves being massed together indiscriminately as a highly porous body of ferrous metal.

3,857,704

MERCURY RECOVERY PROCESS

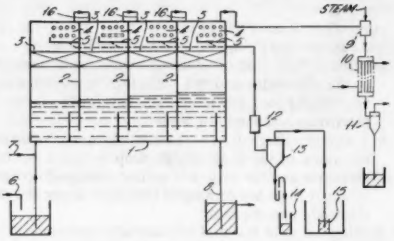
Michael Oliver Coulter, near Crewe, England, assignor to BP Chemicals Limited, London, England

Filed Mar. 3, 1972, Ser. No. 231,527

Claims priority, application Great Britain, Mar. 5, 1971, 6160/71; Canada, Dec. 30, 1971, 131395; Belgium, Dec. 19, 1971, 112372; France, Dec. 29, 1971, 71.7147214; Germany, Dec. 21, 1971, 2163599; Netherlands, Dec. 24, 1971, 7117816; Italy, Dec. 30, 1971, 33180/71

Int. Cl. C22b *43/00*

U.S. Cl. 75—121 **9 Claims**



1. A process for the removal and recovery of mercury from aqueous solutions containing a soluble inorganic compound of mercury and having a mercury concentration not more than 100 milligrams per liter which comprises treating said aqueous solution with a chemical reducing agent selected from the group consisting of ferrous sulphate at a pH greater than 5, hydrazine, iron or steel turnings or chips, hydroxylamine, D-glucose and sodium borohydride to precipitate finely divided elemental mercury, removing said mercury by applying a vacuum and using single stage or multiple stage flash distillation, and recovering said mercury from the vapor.

3,857,705

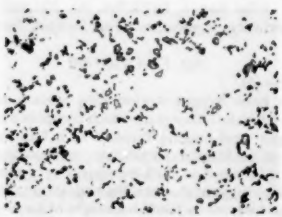
SMALL GRAIN PROMOTING ALUMINUM-TITANIUM-BORON MOTHER ALLOY

Yoshiteru Miyasaka, Shimizu, and Yuichi Masuda, Yaezu, both of Japan, assignors to Nippon Light Metal Research Laboratory, Ltd., Tokyo, Japan

Filed Feb. 6, 1973, Ser. No. 330,094

Int. Cl. C22c *21/00*

U.S. Cl. 75—138 **6 Claims**



1. An aluminum-titanium-boron mother alloy for addition to molten casting aluminum to promote the formation in the solid castings of a uniform small grain crystalline structure, said mother alloy consisting essentially of aluminum containing from about 3.5 up to about 7.5% by weight titanium and from about 0.1 up to about 0.3% by weight boron in a weight ratio of titanium to boron of 20–40:1 and being substantially free of acicular crystals.

3,857,706

ELECTRICAL CONTACT MATERIALS AND METHODS OF MAKING THE SAME

Terrence Ardern Davies, Horton, England, assignor to Square D Company, Park Ridge, Ill.

Filed July 30, 1973, Ser. No. 384,157

Claims priority, application Great Britain, Aug. 25, 1972, 39666/72

Int. Cl. C22c 5/00

U.S. Cl. 75—173 R 17 Claims

1. An electrical contact material which consists of a mixture of silver, an effective amount up to not more than 3.0 weight percent of mercury, an effective amount up to not more than 3.0 weight percent of tellurium, and 2.5 to 20 weight percent of cadmium oxide.

3,857,707

PHOTOELECTROPHORETIC IMAGING PROCESS USING DRY PIGMENT COATED SUBSTRATE

Ira S. Stein, and Leonard M. Carreira, both of Penfield, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 510,637, Nov. 30, 1965, abandoned. This application June 2, 1969, Ser. No. 829,698

Int. Cl. G03g 17/00

U.S. Cl. 96—1.2 6 Claims

4. The method of photoelectrophoretic imaging comprising the steps of

a. providing a dry imaging layer comprising electrically photosensitive particles dispersed in a soluble binder material on a substrate;

b. applying an insulating carrier liquid to said dry imaging layer to form a liquid imaging suspension layer immediately before or during performing steps (c) and (d) recited below;

c. subjecting said suspension layer to an applied electrical field between two electrodes, at least one of which is at least partially transparent; and

d. exposing said suspension layer to imagewise activating electromagnetic radiation through said transparent electrode until an image is formed.

5. The method as defined in claim 4 wherein said dry imaging layer comprises pigments of one color dispersed in a soluble binder material and a monochromatic image is formed.

3,857,708

ZINC OXIDE-BINDER MEDIUM CONTAINING MICROSCOPIC CAVITIES

Karel Eugeen Verhille, and Robert Joseph Noe, both of Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

Continuation of Ser. No. 121,430, March 5, 1971, abandoned, which is a continuation-in-part of Ser. No. 724,459, April 26, 1968, Pat. No. 3,595,691. This application Mar. 5, 1973, Ser. No. 338,027

Int. Cl. G03g 5/06, 5/08

U.S. Cl. 96—1.8 17 Claims

1. A photographic material suitable for electrophotographic recording of information comprising a support and a photoconductive insulating layer containing finely divided solid photoconductive zinc oxide particles or agglomerates thereof and an electrically insulating binder medium in the proportion of about 0.5–10:1, characterized in that the photoconductive layer is porous and contains myriad interconnected microscopic cavities extending at random throughout the entire layer, said cavities being in direct communication with the ambient atmosphere and with surface areas of photoconductive particles contiguous thereto so that myriad air-photoconductor interfaces exist in said layer.

3,857,709

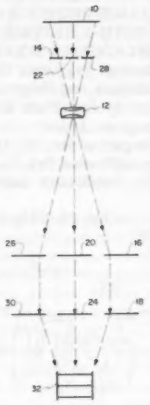
METHOD OF ENHANCING THE INFORMATION LEGIBILITY OF MULTI-COLOR GRAPHIC MATERIAL

Sol Domeshek, 24 Springfield Ave., Cranford, N.J. 07016

Filed Jan. 31, 1973, Ser. No. 328,182

Int. Cl. G03c 7/18, 1/92

U.S. Cl. 96—14 8 Claims



1. Method of enhancing the information legibility of original multi-color graphic material, while retaining the colors of the original but reversing the density of the background of the original and the density of the black printed information of the original, said method including the steps of

A. separately exposing frames of panchromatic, photosensitive, black-and-white, negatively recording material through additively color-separating filters respectively to an image of the original multi-color material,

B. developing and fixing the separate color-separated negative images,

C. printing these additively color-separated negative images respectively on positive-imaging like-color developing transparent materials, and

D. superimposing, in register, the resultant positive image transparencies.

3,857,710

HIGH CONTRAST, HIGH CAPACITY MONOBATH PROCESSING METHOD AND COMPOSITION FOR MONOCHROME FILM

Daniel E. Speers, Westport, Conn., assignor to General Film Development Corporation, Southport, Conn.

Filed Dec. 22, 1972, Ser. No. 317,763

Int. Cl. G03c 5/38, 5/30

U.S. Cl. 96—61 M 2 Claims

1. A high capacity, high contrast monobath solution for photographic processing of silver halide emulsion films at normal room temperature to obtain a high contrast, low fog image, consisting essentially of the following constituents in the proportionate weight amounts given:

Material	Parts by Weight
Water	1000–1005
Anhydrous Sodium Sulphite	15–40
Hydroquinone	9–25
Sodium or Potassium Hydroxide	3–8
Anhydrous Sodium or Potassium Carbonate	2–10
Phenidone	0.1 – 0.8
Benzotriazole	0 – 2
EDTA Tetrasodium Salt	0.5 –3
Sodium Thiosulphate	50–125.

3,857,711
SILVER HALIDE PHOTOGRAPHIC EMULSION SENSITIZED WITH A HETEROCYCLIC COMPOUND CONTAINING 4-SULFUR ATOMS

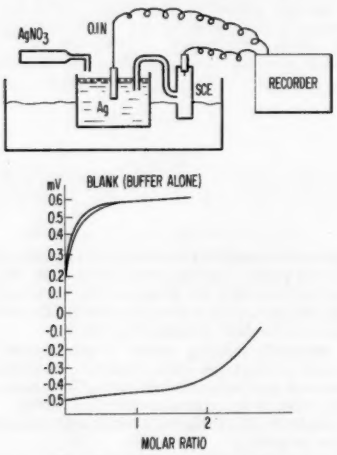
Reiichi Ohi; Mitsunori Sugiyama; Yosuke Nakajima; Michio Horie, all of Ashigara, and Shigeru Kobayashi, Osaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Continuation-in-part of Ser. No. 210,568, Dec. 21, 1971, abandoned. This application Oct. 16, 1973, Ser. No. 406,991

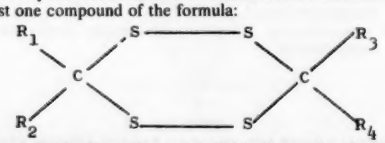
Claims priority, application Japan, Dec. 21, 1970, 45-114544

Int. Cl. G03c *1/28*

U.S. Cl. 96—107 **20 Claims**



1. A photosensitive silver halide emulsion containing at least one compound of the formula:



wherein R_1, R_2, R_3 and R_4 each individually may be a hydrogen or a lower alkyl group.

R_1 and R_2 may combine with the bonded carbon of the sulfur containing ring and with themselves to form a cycloalkyl group containing up to six carbon atoms, including the carbon atom of the sulfur containing ring, and R_3 and R_4 may combine with the bonded carbon of the sulfur containing ring and with themselves to form a cycloalkyl group containing up to six carbon atoms, including the carbon of the sulfur containing ring,

said compound being present in said photosensitive silver halide emulsion in an amount of from about 0.01 to 100 mg per mole of silver halide.

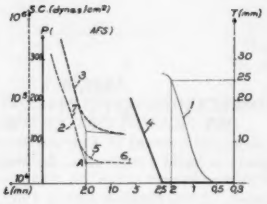
3,857,712
METHOD FOR INCREASING THE MECHANICAL RESISTANCE OF FOUNDRY MOULDS OR CORES MADE FOR A SELF-HARDNING LIQUID SAND

Roland F. Chevriot, Sainte-Genevieve-Des-Bois; Gilles R. Le Maux, Woippy, and Marcel P. Gonon, Saint-Martin-Le-Vinoux, all of France, assignors to Centre Technique Des Industries De La Fonderie Wendel-Sidelor and Industries Chimiques De Voreppe, both of Paris, France

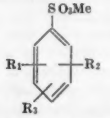
Continuation of Ser. No. 160,026, July 6, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,868

Int. Cl. B28b *7/34*

U.S. Cl. 106—38.35 **14 Claims**



1. In the method for increasing the mechanical resistance of foundry moulds or cores made from a self-hardening liquid sand comprising a refractory sand, an alkaline silicate as a binding agent, a setting agent for the binder, which is blast furnace slag or ferrochromium slag, a liquid and a surface active agent, consisting of mixing said sand and said setting agent in the dry form, then adding a liquid composition comprising said binding agent in water and a surface active agent, the improvement comprising as the surface agent an alkyl benzene sulfonate of formula



in which Me is an atom of an alkali metal, R_1, R_2 and R_3 each represent hydrogen, or a linear or branched alkyl of one to six carbon atoms in the proportion of 0.005 to 2 percent by weight relative to the total weight of the fluid sand, mixing until the sand is fluidized and applying mechanical stresses to the sand in the period of time after the sand has become permeable up to the time when setting begins.

3,857,713
ALKALI FREE LEAD SILICATE GLASS MEDIUM FOR ULTRASONIC DELAY LINES

Takahiro Inamura; Kenichi Sawamoto; Nobukazu Niizeki, all of Laboratory of Nippon Telegraphy & Telephone Public Corporation, 9-11, 3-chome, Midori-cho; Munehisa Tsunekawa, and Yasuyuki Nakata, both of Ohi Kojyo of Nippon Kogaku K.K., 6-3, 1-chome, Nishi-Ohi, all of Tokyo, Japan

Continuation-in-part of Ser. No. 63,194, Aug. 11, 1970, abandoned. This application June 19, 1972, Ser. No. 264,338

Int. Cl. C03c *3/10, 3/30, 3/04*

U.S. Cl. 106—53 **4 Claims**

1. A glass medium for ultrasonic line having the range of −5 to +5 ppm/°C of the temperature coefficient of delay time, attenuation of less than approximately 10×10^{-3} db/cycle at a frequency higher than 1 MH_z, and aging of delay time of less than 50 ppm, the glass medium being devoid of an alkali ion and consisting essentially of, by weight, 36 to 46 percent of SiO_2, 35 to 60 percent of PbO, 0 to 20 percent of AlF_3 and 0

– 10 percent of BaF_2, the total content of the AlF_3 and BaF_2 being present in a range of 2 to 20 percent.

3,857,714

HIGH CALCIUM SULFATE EXPANSIVE CLINKER

Povindar K. Mehta, El Cerrito, Calif., assignor to Chemically Prestressed Concrete Corporation, Van Nuys, Calif.

Continuation-in-part of Ser. No. 171,299, Aug. 22, 1971, abandoned. This application Feb. 4, 1974, Ser. No. 439,529

Int. Cl. C04b 7/02

U.S. Cl. 106—89 8 Claims

1. A calcium sulfoaluminate clinker of the $(CaO)_4(Al_2O_3)_3SO_3$ type containing in the clinker, and in particles resulting from grinding the clinker, an amount of $CaSO_4$ at least about 50 percent and substantially in excess of that required for the production of ettringite on hydration of $(CaO)_4(Al_2O_3)_3SO_3$.

3,857,715

EXTRUSILE HYDRAULIC CEMENT COMPOSITIONS CONTAINING ALKALI AND CARBOHYDRATE

Clyde W. Humphrey, 23 E. Elm St., Norwalk, Ohio 44854

Filed Mar. 1, 1972, Ser. No. 231,020

Int. Cl. C04b 7/00

U.S. Cl. 106—92 10 Claims

1. A method for producing a cured hydraulic cement-containing product which comprises:

A. admixing into a mix containing a hydraulic cement,

1. first, an aqueous solution of a water-soluble alkali compound selected from the class consisting of a sodium compound, potassium compound, and nitrogen compound that has a 0.1NpH in water of 11.0 or greater, and

2. then, water-soluble carbohydrate and water in quantities sufficient to provide an admixture that is cohesive and can be formed into a product, the quantity of said water-soluble carbohydrate being at least about 1 part per 100 parts of the hydraulic cement;

B. forming the admixture into the product by an extrusion process; and

C. conditioning the product until the admixture is cured.

3,857,716

PROCESS FOR PRODUCTION OF ASPHALT

Victor A. Dorman-Smith, 7 Bushy Park Rd., Rathgar, Dublin 6, Ireland

Filed Dec. 5, 1969, Ser. No. 882,742

Int. Cl. C10c 3/08, 1/18

U.S. Cl. 106—278 4 Claims

1. A process for producing an asphalt with improved viscosity-temperature characteristics which comprises:

a. treating an asphalt residue fraction of a petroleum crude oil with a solvent comprising:

1. at least 1% volume of a low boiling liquid hydrocarbon having less than 10 carbon atoms per molecule, and

2. at least 50% volume of acetone,

b. separating an upper phase, and

c. recovering an asphalt with improved viscosity-temperature characteristics from the lower phase.

3,857,717

CHEMICAL RESISTANT, TEMPERATURE RESISTANT LACQUER-LIKE INORGANIC COATING COMPOSITION

Gerhard Wydra, Dachau, and Franz Puchinger, Munich, both of Germany, assignors to Motoren-und Turbinen-Union Munich GmbH, Munich, Germany

Filed Aug. 11, 1972, Ser. No. 279,764

Claims priority, application Germany, Aug. 11, 1971, 2140208

Int. Cl. C04b 41/06; C09d 1/00; C23f 7/00

U.S. Cl. 106—286 8 Claims

1. A chemical resistant, temperature resistant, inorganic lacquer-like coating composition which comprises a binding agent and a finely divided powdered filler material selected from the group consisting of finely ground quartz, zirconium oxide, kaolin and iron oxide and having a particle size of from about 5 to 20 microns, said filler material being homogeneously distributed within the binding agent, the proportion of filler material in the coating composition being from about 30 to about 70% by weight of the total weight of the composition and the balance comprising the binding agent, and said binding agent consisting essentially of an aqueous chromic acid solution containing from about 20 to 30% by weight of chromic acid admixed with about 10 to 30% by weight of phosphorous acid.

7. A process for forming a chemical resistant and temperature resistant coating on a ceramic or metallic substrate which comprises applying a coating composition comprising a binding agent and a finely divided filler material selected from the group consisting of finely ground quartz, zirconium oxide, kaolin and iron oxide and having a particle size of from about 5 to 20 microns, said filler material being homogeneously distributed within the binding agent, the proportion of filler material in the coating composition being from about 30 to about 70% by weight of the total weight of said composition and the balance comprising the binding agent and said binding agent consisting essentially of an aqueous chromic acid solution containing from about 20 to about 30% by weight of chromic acid admixed with about 10 to about 30% by weight of phosphorous acid; heating the applied coating composition to a temperature sufficient to remove water therefrom and thereafter baking at higher temperature to set up the binding agent.

3,857,718

PRESSURE-SENSITIVE TRANSFER COATING

Joseph L. Shank, Matteson, Ill., assignor to Swift & Company, Chicago, Ill.

Filed May 24, 1972, Ser. No. 256,436

Int. Cl. C08h 17/02

U.S. Cl. 186—288 Q 9 Claims

1. In a process for the manufacture of transfer sheet coating compositions containing dye, plasticizer and a hydrophobic powder wherein the dye is adsorbed onto the lattice of a hydrophobic powder which prevents unwanted migration of dye and cold flow of the transfer layer formed from the coating composition, the improvement comprising first adding the dye to an ester-type plasticizer and intimately agitating the resulting solution with a silica powder so that the dye and plasticizer are adsorbed on the lattice of the silica powder prior to the said coating composition being combined with a binding agent.

3,857,719

TREATMENT OF CLAYS

Tryggve Baak, Princeton, N.J., and Dwight L. Harris, Yardley, both of Pa., assignors to Cyprus Mines Corporation, Trenton, N.J.

Filed Sept. 13, 1973, Ser. No. 397,110

Int. Cl. C09c 1/42

U.S. Cl. 106—288 B 6 Claims

1. A process for brightening clay to a point where the reflec-

tance of light from said clay in dry form has a predetermined selected value, which comprises:

forming an agitated reaction mixture comprising an aqueous slurry of said clay and a decolorizing agent reactive with the impurities in said clay,

maintaining said reaction mixture at a temperature sufficient to initiate and sustain the reaction between said decolorizing agent and said impurities,

directing visible light onto at least a portion of said slurry, measuring the magnitude of the reflectance of said light by said slurry,

increasing the measured value of the reflectance of said light by said slurry by reacting said decolorizing agent with said clay impurities until the measured value reaches a value representative of said predetermined value, and

recovering from said aqueous reaction mixture dry clay characterized by a light reflectance of said predetermined selected value.

3,857,720

POLYSILOXANE COATED TRANSFER BASE

Charles T. Fellows, Kettering, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Feb. 8, 1973, Ser. No. 330,766

Int. Cl. B41c *1/06;* **C08g** *37/32*

U.S. Cl. 117—36.1 **8 Claims**

1. A transfer medium comprising a base having a transferable coating composition in a single layer thereon; said coating composition comprising a substantially homogeneous mixture of about 3 to 40 percent by weight of a polysiloxane rubber gum having a molecular weight ranging from about 200,000 to 1,000,000; about 10 to 60 percent by weight of a polysiloxane resin having a molecular weight ranging from about 300 to 100,000; about 1 to 65 percent by weight of a sensible material; about ½ to 10 percent by weight of a wax; and about 1 to 10 percent by weight of a release and adhesion enhancing material selected from the group consisting of polyethylene and copolymers of polyethylene having molecular weight of about 1,000 to 12,000, softening point of about 180 to 270° Fahrenheit, and being present as a particulate, finely-divided solid 0.1 to 5.0 microns in average diameter.

3,857,721

SHEET CONTAINING DEVELOPER FOR PRESSURE-SENSITIVE RECORDING

Takao Hayashi, Fujimiya, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

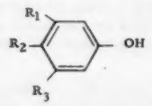
Filed Mar. 8, 1972, Ser. No. 232,938

Claims priority, application Japan, Mar. 9, 1971, 46-12641

Int. Cl. B41m *5/12*

U.S. Cl. 117—36.8 **14 Claims**

1. In a pressure sensitive recording developer sheet comprising a phenolic resin developer coated on a support, the improvement which comprises said phenolic resin developer being the condensation product of p-phenyl phenol and at least one alkyl phenol represented by the general formula



wherein R_1, R_2 and R_3, which may be the same or different, each represents a hydrogen atom or an alkyl group, said alkyl group containing from 1 to 12 carbon atoms, with the proviso that R_1, R_2 and R_3 are not simultaneously a hydrogen atom, with an aldehyde, wherein said alkyl phenol is present in said condensation product at a level of from about 0.2 to about 2 moles of said alkyl phenol per mole of p-phenyl phenol and said aldehyde is present at a level of from about 0.5 to about 2.0 moles of aldehyde per total moles of phenol.

11. The sheet of claim **10,** wherein said aldehyde is formaldehyde.

3,857,722

METHOD FOR ELECTROSTATIC DUPLICATION

Robert J. Wright, Tranmere, Australia, assignor to Research Laboratories of Australia Pty. Limited, South Australia, Australia

Filed Mar. 14, 1973, Ser. No. 341,065

Claims priority, application Australia, Apr. 10, 1972, 8540/72

Int. Cl. G03g *13/10, 13/16*

U.S. Cl. 117—37 LE **11 Claims**

1. A method of image formation comprising the steps of:

forming a transferable image deposit of polar material on one surface of an intermediate master, transferring at least portion of said polar image deposit to a duplicating second surface to form a polar imaging deposit thereon, contacting the dielectric surface of an electrographic recording member with at least said polar imaging deposit contained on said duplicating surface to form a latent image on said dielectric surface which is responsive to electroscopic development, and developing said latent image by contacting said dielectric surface with electroscopic marking particles.

3,857,723

PROCESS OF COATING POLYMERIC SHAPED OBJECTS WITH ALUMINUM ORTHOSPHOSPHATE

Vernon C. Haskell, and James L. Hecht, both of Richmond, Va., assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 273,301, July 19, 1972, Pat. No. 3,821,014, which is a continuation-in-part of Ser. No. 182,641, Sept. 22, 1971, abandoned. This application Jan. 3, 1973, Ser. No. 320,752

Int. Cl. C01b *25/36;* **B44d** *1/092*

U.S. Cl. 117—46 FC **6 Claims**

1. A process for coating an organic polymeric shaped article with a substantially continuous, gas-impermeable coating on at least one surface thereof by applying to said article an aqueous dispersion of aluminum chlorhydroxide and phosphoric acid wherein the atom ratio of aluminum to phosphorus is less than 1 but at least 0.8, said dispersion being applied in an amount sufficient to yield a dried coating weight of about 0.02 to 0.6 gram per square meter, and drying the coated, shaped article to remove excess water.

3,857,724

PRIMER FOR ELECTROLESS PLATING

Peter Bakos, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 173,621, Aug. 20, 1971, abandoned. This application Mar. 16, 1973, Ser. No. 342,015

Int. Cl. B44d 5/00

U.S. Cl. 117—47 A 6 Claims

1. A process for forming an adherent metal coating on a surface comprising:

contacting said surface with a substantially non-aqueous organic solvent solution consisting essentially of from about 0.001 to 2.0 percent by weight of solution of a gold or platinum salt selected from the group consisting of acid gold chloride and chloroplatonic acid and from about 0.00005 to about 0.05 percent by weight of solution of an inhibitor for an electroless plating solution which inhibitor is an inorganic or organic sulfur compound selected from the group consisting of alkali metal thiocyanates, sodium sulphate, alkali metal thiosulphates, 8-mercaptopurine, thiodiglycolic acid, thiomalic acid, thiocarbanates, thiazolines, thiazines an mixtures thereof, said solvent being selected from the group consisting of low boiling alcohols, ketones, and non-halogenated hydrocarbons,

removing said solvent to leave a deposit of said salt and said inhibitor on said surface, and

contacting said surface with a copper or nickel electroless metal plating solution to form said coating on said surface.

3,857,725

METHOD FOR FORMING AN IRON-MANGANESE CARBIDE LAYER ON THE SURFACE OF AN IRON BASE ALLOY ARTICLE CONTAINING CARBON

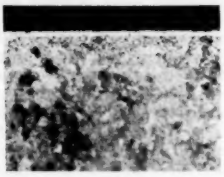
Noboru Komatsu; Tohru Arai; Mikio Obayashi, and Junji Endo, all of Nagoyashi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Hisakata, Japan

Filed Mar. 29, 1973, Ser. No. 346,946

Claims priority, application Japan, Apr. 8, 1972, 47-35550

Int. Cl. C23c 9/08, 9/02

U.S. Cl. 117—49 5 Claims



1. A method for forming an iron-manganese carbide layer on the surface of an iron base alloy article containing at least 0.1 percent carbon in a powdery treating material, comprising the steps of preparing the powdery treating material consisting essentially of 1 to 40 percent of at least one member selected from the group consisting of potassium tetrafluoroborate, sodium tetrafluoroborate and ammonium tetrafluoroborate and mixtures thereof and 60 to 99% of a member selected from the group consisting of metallic manganese and iron-manganese alloys, packing the iron base alloy article in said powdery treating material, heating said article within said powdery treating material at a temperature of between 650°C and 1,200°C for 1 to 30 hours, and taking said article out of said powdery treating material, thereby forming an iron-manganese carbide layer on the surface of said article.

3,857,726

ADHESIVE DIP FOR BONDING RUBBER TO BRIGHT STEEL WIRE

Gerard E. Van Gils, Tallmadge, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed July 5, 1973, Ser. No. 376,510

Int. Cl. B32b 15/02, 15/06

U.S. Cl. 117—49 6 Claims

1. A method for adhering a bright steel or bright alloy steel reinforcing element to a rubber compound which comprises:

a. dipping said element in a dip consisting essentially of an aqueous alkaline dispersion containing a mixture of a rubbery vinyl pyridine copolymer and a heat reactable 2,6-bis(2,4-dihydroxy phenylmethyl)-4-chlorophenol composition;

b. curing said dipped element;

c. combining said dipped and cured element with a vulcanizable rubber compound; and

d. vulcanizing the resultant product.

3,857,727

TEXTILE FINISHING

Ladislav Benisek, 36, West View Ave., Burley-in-Wharfedale-Yorkshire, England

Filed Oct. 19, 1971, Ser. No. 190,665

Claims priority, application Great Britain, Oct. 22, 1970, 50324/70; Jan. 29, 1971, 3516/71

Int. Cl. C09k 3/28; C09d 5/18

U.S. Cl. 117—62 6 Claims

1. A process for improving the flame resistance of natural and synthetic polyamide fibres which comprises wetting the fibres with an aqueous solution of a complex compound of titanium consisting essentially of titanium complexed with fluoride ions, a di- or polycarboxylic acid organic chelating agent or hydroxycarboxylic acid organic chelating agent having a pH less than about 4 until the fibres have taken up at least 0.2% by weight of the complex compound of titanium, calculated as titanium dioxide, from said solution.

3. The process of claim 1 wherein the complex titanium compound containing fibres are treated with an aqueous solution containing fluoride ions to reduce the yellowing thereof.

3,857,728

METHODS OF UTILIZING SYNTHETIC RESIN BINDER COMPOSITIONS

Arthur H. Drelich, Plainfield, and Bobby R. Bowman, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Dec. 6, 1971, Ser. No. 205,376

Int. Cl. C08k 1/02; B44d 1/44

U.S. Cl. 117—62.2 19 Claims

1. A method of bonding porous, absorbent fibrous materials which comprises applying thereto a water-based synthetic resin binder composition having a pH in the range of from about 2 to about 6 and comprising: from about 0.1% to about 60% by weight on a solids basis of a colloidally dispersed synthetic resin; from about 0.1% to about 6% by weight, based on the weight of the colloidally dispersed synthetic resin, of a water-soluble salt of zirconium or aluminum; and from about 0.05% to about 3% by weight, based on the weight of the colloidally dispersed synthetic resin, of a water-soluble polymeric polyhydroxy compound which does not contain interfering acidic chemical groups; substantially immediately diluting said synthetic resin binder composition whereby a zirconium or aluminum cation is released from said water-soluble salt to substantially immediately destroy the stability of said synthetic resin binder composition and to coagulate said resin with a minimum of further migration and bond the porous, absorbent fibrous materials; and drying said porous, absorbent fibrous materials.

3,857,729

INDICIA RECEIVING MATTE SHEET MATERIALS HAVING AN OUTERMOST ANTISTATIC LAYER

Herman Burwasser, 1909 Clover Dr., Vestal, N.Y. 13850

Filed Sept. 21, 1972, Ser. No. 290,782
Int. Cl. C09k 3/16; B32b 27/36
U.S. Cl. 117—73 7 Claims

1. An improved matte sheet material capable of receiving indicia markings comprising a polyester base sheet, at least one surface of which carries a layer of cellulosic film forming lacquer composition, and at least one outermost layer of an antistatic composition comprising a sulfonated polystyrene and a cycloaliphatic amine salt of an alcohol sulfate in which at least one alicyclic radical containing at least 5 carbon atoms is attached to the amine nitrogen atom and the alcohol radical of the alcohol sulfate has at least 5 carbon atoms and the compound altogether contains at least 12 carbon atoms.

3,857,730

BONDING POLYESTERS TO RUBBER

Edward F. Kalafus, Akron, and Richard M. Wise, Uniontown, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed June 11, 1973, Ser. No. 368,558
Int. Cl. C09j 3/12; B32b 27/36
U.S. Cl. 117—76 T 10 Claims

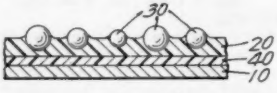
1. A method for adhering a polyester reinforcing element to a rubber compound which comprises dipping said element in a dip consisting essentially of an aqueous alkaline emulsion consisting essentially of a minor amount by weight of a mixture of a major amount by weight of a rubbery vinyl pyridine copolymer and a minor amount by weight of a heat reactable 2,6-bis(2,4-dihydroxy phenylmethyl)-4-chlorophenol composition, drying the dipped element, and combining said dipped and dried element with a vulcanizable rubber compound and vulcanizing the resultant product, said emulsion being essentially free of alkali metal materials and the emulsifier used in said emulsion being water soluble and being selected from the group consisting of an ammonium sulfate of an aliphatic alcohol, an ammonium phosphate of an aliphatic alcohol, and an ammonium soap of a carboxylic acid and mixtures thereof.

3,857,731

ACRYLATE MICROSPHERE-SURFACED SHEET MATERIAL

Roger F. Merrill, Jr., Troy Township, Saint Croix County, Wis., and Henry R. Courtney, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Mich.

Filed Apr. 6, 1973, Ser. No. 348,604
Int. Cl. A61l 15/06
U.S. Cl. 117—122 PA 9 Claims



1. A repeatedly usable pressure-sensitive sheet material comprising a substrate having bonded thereto a binder material, said binder having partially embedded in and protruding from its exposed surface inherently tacky elastomeric copolymer microspheres consisting essentially of

a. about 90 to about 99.5 percent by weight of one or more oleophilic, water-emulsifiable alkyl acrylate esters, at least one of said esters being selected from the group consisting of iso-octyl acrylate, 4-methyl-2-pentyl acrylate, 2-methylbutyl acrylate, and sec-butyl acrylate and correspondingly

b. about 10 to about 0.5 percent by weight of one or more monomers selected from the group consisting of trimethylamine methacrylimide, trimethylamine p-vinyl benzimide, ammomium acrylate, sodium acrylate, N,N-dimethyl-N-(β-methacryloxyethyl) ammonium propionate betaine, 1,1-dimethyl-1-(2-hydroxypropyl) amine methacrylimide, 4,4,9-trimethyl-4-azonia-7-oxo-8-oxa-9-decene-1-sulphonate, 1,1-dimethyl-1-(2,3-dihydroxypropyl) amine methacrylimide, and maleic anhydride.

3,857,732

PROCESS FOR MANUFACTURE OF DEODORIZING AIR FILTERS

Toshio Yoshino, Nishinomiya, Japan, assignor to C. Weinberger & Co. Ltd., Osaka-shi, Japan

Filed May 24, 1971, Ser. No. 123,798
Claims priority, application Japan, May 23, 1970, 45-44204
Int. Cl. B32b 27/12; C09d 3/76
U.S. Cl. 117—138.8 N 6 Claims

1. Process for manufacturing a deodorizing gas filter which comprises dissolving polyvinyl alcohol in water; adding to said solution at least one substance which is an amphoteric ion exchange resin, activated carbon or coconut shell charcoal, thereby forming a pasty mass; adding to said pasty mass glyoxal in the amount in excess of that which would be suddicient to acetalize the polyvinyl alcohol, and a small amount of acid for the acetal formation; impregnating the resulting composition into a non-woven textile fabric gas filter; and heating said impregnated filter at about 70°–100°C for 30 minutes to 2 hours, thereby converting said polyvinyl alcohol to polyvinyl acetal.

3,857,733

METHOD OF ELECTROLESS METAL DEPOSITION

Anthony Francis Arnold, Ringoes, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,719
Int. Cl. B44d 1/18; B32b 15/100
U.S. Cl. 117—212 7 Claims

1. A method of electrolessly depositing a metal on a surface of a body comprising:

supporting said body on an inert work holder made of a material which does not catalyze the electroless deposition of said metal,

treating said surface and said work holder with a solution containing a substance which catalyzes the electroless deposition of said metal,

rinsing said surface and said work holder with a solution of a substance that chelates ions of the catalyst, and

treating said surface with a plating bath comprising a salt of said metal, a reducing agent for said metal salt, a complexing agent for ions of said metal, and a pH adjusting agent.

3,857,734

MANGANESE BISMUTH THIN FILMS ON REACTIVE SUBSTRATES

Di Chen, Minnetonka, and Gary N. Otto, Mayer, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 4, 1972, Ser. No. 250,443
Int. Cl. H01f 10/02
U.S. Cl. 117—240 9 Claims

1. A magnetic storage element comprising:

a nonmagnetic substrate capable of reacting with manganese, bismuth, or manganese bismuth,

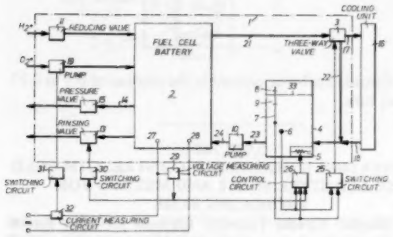
a thin passivating layer of oxidized aluminum over the substrate, and

a manganese bismuth thin film over the thin passivating layer, the manganese bismuth thin film having its preferred magnetization direction oriented normal to the plane of the manganese bismuth thin film.

3,857,735
FUEL CELL SYSTEM

Gerhard Louis, Hofheim, and Harald Bohm, Glashutten, both of Germany, assignors to LICENTIA Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Mar. 27, 1973, Ser. No. 345,459
Claims priority, application Germany, Mar. 28, 1972, 2215060
Int. Cl. H01m *27/12*
U.S. Cl. 136—86 C **8 Claims**



1. In a fuel cell system including a fuel cell battery having a reaction chamber; an anode and cathode means within the reaction chamber; closed circuit means for circulating an aqueous solution of electrolyte through the reaction chamber; and regulating means for regulating the discharge of water by evaporation from said reaction chamber to effect a rate of water discharge substantially equalling that of the production of water in the reaction chamber, whereby the quantity of water determining the concentration of the circulating aqueous solution is maintained substantially constant, the improvement wherein said regulating means comprises in combination:

a. monitoring means connected to said closed circuit means for sensing the quantity of said aqueous solution with respect to a predetermined value range; and

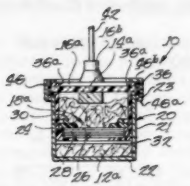
b. temperature control means for regulating the temperature of the aqueous solution to affect the rate of evaporation of the aqueous solution in the reaction chamber, said temperature control means being connected to said closed circuit means and said monitoring means for raising the operating temperature of said aqueous solution when the quantity of said aqueous solution is above the predetermined value range and lowering the operating temperature of the aqueous solution when the quantity of the aqueous solution is below the predetermined value range.

3,857,736
BATTERY CELL CONSTRUCTION WITH AN INDIUM ANODE AND INDIUM HYDROXIDE IN THE ELECTROLYTE

Ralph T. Mead, Kenmore, N.Y., assignor to Wilson Greatbatch Ltd., Clarence, N.Y.

Continuation of Ser. No. 235,544, March 17, 1972, abandoned. This application Sept. 27, 1973, Ser. No. 401,187
Int. Cl. H01m *17/00*
U.S. Cl. 136—100 R **19 Claims**

1. A battery cell comprising in combination, cathode means formed of a compound containing mercury oxide, anode means formed of indium alloy, and electrolyte means between said cathode means and said anode means, said electrolyte means being formed of a mixture including indium hydroxide



in an amount in excess of saturation to generate hydrogen gas at a relatively low rate.

3,857,737
SEQUENTIAL CATALYZATION OF FUEL CELL SUPPORTED PLATINUM CATALYST

Fred S. Kemp, Ellington, and Michael A. George, Bethel, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 18, 1973, Ser. No. 398,356
Int. Cl. H01m *27/10;* **C23c** *3/04*
U.S. Cl. 136—120 FC **7 Claims**

1. In the preparation of fuel cell electrode supported catalytic powders comprising a predetermined fixed amount of platinum disposed in a desired concentration on carbon support powders by the formation of the platinum from platinum diamino dinitrite, the steps of:

a. mixing on the order of 10 grams of graphitized carbon powder, having a particular size on the order of 1–5 microns in diameter and a surface area of on the order of 75 to 200 square meters per gram, in a dilute solution comprising on the order of 1 gram of platinum diamino dinitrite dissolved in nitric acid, the concentration of the solution being such that the effective amount of the -dinitrite therein is less than that required for the formation of the entire predetermined fixed amount of the platinum on the carbon support powders;

b. slowly concentrating the -dinitrite solution in the slurry until a nearly dry paste is formed, and removing all of said solvent from said solution, forming substantially a powder;

c. heating the powder at a temperature in excess of the decomposition temperature of the -dinitrite, providing an intermediate product comprising carbon powders having less than the predetermined fixed amount of the platinum absorbed on the surface thereof;

d. immersing the intermediate product in a dilute solution of platinum diamino dinitrite dissolved in a solvent, the concentration of the -dinitrite therein not exceeding that required to provide by formation on the intermediate product an additional amount of the platinum not exceeding the amount required to form the predetermined fixed amount of platinum on the carbon powders;

e. repeating step (b);

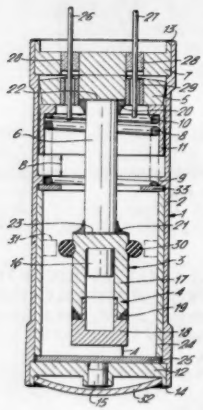
f. heating the powder at a temperature in excess of the decomposition temperature of the -dinitrite, providing powders having not more than the predetermined fixed amount of platinum on the surface thereof;

g. and, if the concentration of platinum is less than the predetermined fixed amount, repeating steps (d) through (f) until such amount is provided.

3,857,738
THERMOELECTRIC BATTERY SPRING SUPPORTED IN CASING

Michael Harold Brown, Newbury, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Nov. 16, 1972, Ser. No. 307,142
Claims priority, application Great Britain, Dec. 20, 1971, 59174/71
Int. Cl. H01v *1/02*
U.S. Cl. 136—202 **7 Claims**



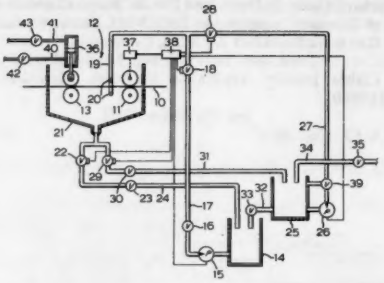
1. A thermoelectric battery comprising a casing enclosing a thermoelectric assembly of elongated form comprising a heat source, a heat sink, and a thermoelectric unit attached to and disposed between the heat source and the heat sink, with at least the heat source end of the assembly defining an annular space with the casing, a heat-conducting mass of solid material disposed at the heat sink end of the assembly and attached to the casing, spring means mounted within the casing so as to bias the heat sink into heat-conducting contact with said mass, adjacent surfaces of the heat sink and the mass being formed so as to allow the assembly to move relative to the casing with a rocking motion against the bias of the spring means in the event of lateral acceleration forces being applied to the battery so that such motion will cause the heat source end of the assembly to pivot within the annular space, and resilient stop means for preventing direct contact between said assembly and said casing.

3,857,739
COMPOSITIONS AND PROCESSES FOR PRODUCING CHROMIUM CONVERSION COATINGS ON SURFACES OF ZINC OR CADMIUM

Michael Ward Prust, Grimsby, Ontario, and Wayne Charles Glassman, Willowdale, Ontario, both of Canada, assignors to Dominion Foundries and Steel Limited, Hamilton, Ontario, Canada

Filed Aug. 31, 1972, Ser. No. 285,314
Int. Cl. C23f *7/26*
U.S. Cl. 148—6.1B **13 Claims**

1. A composition for producing a chromate protective coating on a surface comprising zinc or cadmium, the composition consisting of an aqueous solution of pH less than 1.15 containing a source of chromium ion, the chromium ion being present in the amount of 5–15 grams per liter, a source of perchlorate ion, the perchlorate ion being present in the amount of 0.5 to 0.85 grams per litre, and a source of fluoride



ion, the fluoride ion being present in the amount of 0.1 to 0.27 grams per litre.

3,857,740
PRECIPITATION HARDENING HIGH STRENGTH COLD ROLLED STEEL SHEET AND METHOD FOR PRODUCING SAME

Hisashi Gondo; Hiroshi Takechi; Tsuyoshi Kawano; Kazuo Namba, all of Kisarazu; Hiroaki Masui, Kimitsu; Koji Ozaki; Shunichi Uchida, both of Kisarazu, and Koichi Sakurai, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed July 9, 1973, Ser. No. 377,308
Claims priority, application Japan, July 11, 1972, 47-68670; June 20, 1973, 48-69615
Int. Cl. C21d *7/14*; C22c *41/02*
U.S. Cl. 148—12 F **4 Claims**

1. A method for producing a precipitation hardening high strength cold rolled steel sheet comprising heating a steel slab containing 0.03 to 0.25% C, not more than 1.5% Si, 0.6 to 2.5% Mn, 0.01 to 0.15% Al, 0.01 to 0.40% effective Ti (total [Ti%]- 3.4[N%]- 1.5[O%]- 1.5[S%]) and satisfying the condition of 4[C%]- 0.6%<effective Ti%<4[C%], with the balance being Fe and unavoidable impurities at a temperature not lower than 1,200°C, hot rolling the slab, subjecting the hot rolled sheet to a finishing rolling at a temperature not lower than 870°C, coiling the sheet at a temperature between 560° and 680°C, acid pickling the sheet, cold rolling the sheet with a reduction rate not less than 30% and subjecting the sheet to recrystallization annealing at a temperature between 600° and 900°C.

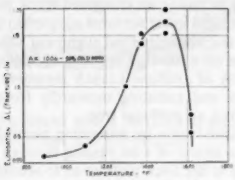
3,857,741
STEEL PRODUCT HAVING IMPROVED MECHANICAL PROPERTIES

Frank A. Hultgren, Burton, and Richard A. Kot, Parma, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation-in-part of Ser. Nos. 227,045, Feb. 17, 1972, Pat. No. 3,723,144, and Ser. No. 98,674, Dec. 16, 1970, abandoned. This application Mar. 19, 1973, Ser. No. 342,700
Int. Cl. C21d *9/48*; C22c *39/14*
U.S. Cl. 148—36 **10 Claims**

1. A steel product having a selected shape produced by deformation of a body of steel which has a compositional character that is normally ferritic and is such that as exhibited by the equilibrium phase diagram for said compositional character there is an alpha-gamma-transition temperature value capable of providing temporary microstructural instability, said steel product having substantially greater impact strength than said body of steel, said steel product being ferritic and having a microstructure composed essentially of ferrite grains characterized by a coarse cell substructure within each of the grains, and said steel product being produced by: subjecting said body of steel to rapid heating, at a rate of at least about

10° F. per second, to the aforesaid temperature value, holding the body at said value for providing high ductility in said body during an interval of microstructural instability while transformation occurs in the steel from alpha iron at least partially to gamma iron, and subjecting the body to rapid deformation to said selected shape by applying stress thereto while the body is held at the said temperature value in said interval.



3,857,742

SOLID PROPELLANT FORMULATION CONTINUING FLUORO-AMINO COMPOUNDS AND POLYMERS

Herman Bieber, Kenilworth, and Lawrence Spenadel, Fanwood, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 77,470, Dec. 21, 1960, Pat. No. 3,535,173. This application May 17, 1961, Ser. No. 111,131

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.3 5 Claims

1. A high-energy composite which on ignition burns at a controlled rate at a specific impulse in the range of 260 to 300 seconds, comprising 2 to 15 wt. percent boron, 5 to 25 wt. percent of a CNF_2 oxidizer selected from the group consisting of tetrakis (difluoramino) butane and tetrakis (difluoramino) tetrahydrofuran, 40 to 60 wt. percent of an oxygen oxidizer selected from the group consisting of nitronium perchlorate, hydrazinium nitroformate, hexanitroethane and ammonium perchlorate, and 5 to 30 wt. percent of a solid polymeric binder having the composition of polybutadiene (N_2F_4) adducts represented by the recurring unit composition $[C_4H_6(NF_2)_y]$ in which y represents 1.3 to 2 NF_2 groups per recurring unit, the boron being in a 1:1 atomic ratio of fluorine in the composite to form BOF as a main combustion product.

3,857,743

THIXOTROPIC METAL-CONTAINING MONOMETHYLHYDRAZINE FUEL AND METHOD OF PREPARING THE SAME

Barry D. Allan, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 3, 1966, Ser. No. 518,489

Int. Cl. C06b *19/04;* C06c *1/02*

U.S. Cl. 149—20 6 Claims

1. A composition consisting of gelled monomethylhydrazine containing dispersed therein up to 70 weight percent finely divided metallic fuel particles and a cellulose or hydroxyalkyl-substituted cellulose gelling agent.

3,857,744

METHOD FOR MANUFACTURING COMPOSITE ARTICLES CONTAINING BORON CARBIDE

James R. Moss, Golden, Colo., assignor to Coors Porcelain Company, Golden, Colo.

Filed Jan. 19, 1970, Ser. No. 4,066

Int. Cl. B29c *27/30;* C04b *35/52*

U.S. Cl. 156—60 8 Claims

1. In a method for manufacturing an impregnated carbide body wherein a compact of carbide powder is contacted with molten impregnant selected from the group consisting of the metals and silicon to cause the impregnation of said body with said impregnant, the improvement which comprises applying to a surface of said compact, prior to contacting said compact with said molten impregnant, a material which is not wetted by said molten impregnant, said material thereby inhibiting the adherence of said impregnant to said surface.

3,857,745

METHOD OF COVERING ARTICLES WITH LEATHER

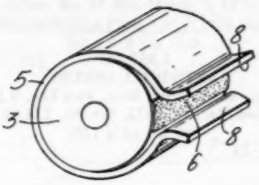
Wolfgang Dieter Grausch, and David Hugh O'Hare, both of Auckland, New Zealand, assignors to Fisher & Paykel Limited, Auckland, New Zealand

Filed Apr. 18, 1973, Ser. No. 352,306

Claims priority, application New Zealand, Apr. 18, 1972, 166917

Int. Cl. C14b *5/00;* C09j *5/02*

U.S. Cl. 156—83 3 Claims



1. A method of covering articles with leather, said method comprising the steps of: applying a band of a suitable adhesive to the article at positions where it is desired that a joint in the leather should occur; preparing the leather in a manner such that inner faces adjacent the edges of the leather adjacent a joint between such edges can be contacted to each other when the leather covers the article; applying adhesive to the leather adjacent the edges to be joined so that the parts which contact each other have adhesive applied to them and the parts of the leather which contact the adhesive on the article have adhesive applied to them; applying to portions of the leather intermediate said edges a leather-expanding solution; applying the leather to the article in a taut condition so the leather adheres to the article at the area to which the adhesive has been applied and the parts of the leather adjacent the edges are contacted and adhered to each other, whereby when the leather is applied to the articles in the taut condition it is stretched while still wetted by the leather expander so that when the leather-expanding solution dries a very taut leather-covered article results.

3,857,746

COLOR DECALCOMANIA AND METHOD

Louis A. Blanco, Tuckahoe, N.Y., and William F. Wenning, Jr., Beaver Falls, Pa., assignors to Commercial Decal, Inc., Mount Vernon, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,621

Int. Cl. C04b *37/00;* B41m *3/12*

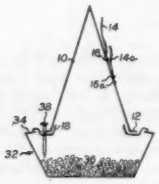
U.S. Cl. 156—89 25 Claims

1. A method of forming a color decalcomania including a backing or substrate layer and a color design layer deposited

thereon, wherein the steps of forming the design layer comprise separately depositing on a substrate at least three ceramic color compositions in patterns which overlap to a desired extent to produce upon firing at least such three colors and additional colors where such overlap occurs, each color composition deposited as a separate layer, each color composition comprising a ceramic pigment in admixture with a frit, the frit of each color composition containing at least about 5% by weight of a cadmium substituent, such colors including at least blue color, red color and yellow color, and drying each deposition of ceramic color composition before depositing the next ceramic color composition to form the design layer.

25. A method of decorating an article or ware, which comprises forming a color decalcomania including a backing or substrate layer and a color design layer deposited thereon, wherein the steps of forming the design layer comprise separately depositing on a substrate at least three ceramic color compositions in patterns which overlap to a desired extent to produce upon firing at least such three colors and additional colors where such overlap occurs, each color composition deposited as a separate layer, each color composition comprising a ceramic pigment in admixture with a frit, the frit of each color composition containing from about 5 to about 50% by weight of a cadmium substituent, such colors including at least blue color, red color, and yellow color, and drying each deposition of ceramic color composition before depositing the next ceramic color composition to form the design layer; applying the color decalcomania to the ware; and firing the ware and decalcomania to cause the frit and colors of the decalcomania to fuse and to bond the decalcomania to the ware.

3,857,747
ARTIFICIAL SHRUBS
Daniel Bitecola, 1095 Abbott Blvd., Fort Lee, N.J. 07024
Filed Mar. 14, 1972, Ser. No. 234,626
Int. Cl. A41g *1/00*
U.S. Cl. 161—21 **9 Claims**



1. An artificial shrub comprising a hollow downwardly open-mouthed plastic shell, a multiplicity of foliage sprays overlying said shell and obscuring it from external view, each of said sprays having a free upper end and a fixed lower end, a plurality of staples projecting from outside said shell into the hollow thereof and fixing said lower ends of said sprays to said shell, said sprays being arranged in tiers so that the free ends of the sprays of one tier hide the staples securing the sprays of the next higher tier, and an upwardly open annular channel member serving as the means for joining said shrub to a soil-like sub-surface such as a pot or the ground.

3,857,748
CHRISTMAS TREE ASSEMBLY
Carl S. Thomann, 3738 S. Grun Ct., Englewood, Colo. 80110
Filed May 21, 1973, Ser. No. 361,961
Int. Cl. A47g *33/06*
U.S. Cl. 161—24 **5 Claims**

1. A christmas tree assembly adapted to be mounted on a pivotal door comprising in combination:

an elongated rigid planar back plate having a generally triangular configuration with an upper portion and a lower portion, and connection means on said upper and lower portions for releasably connecting together the upper and lower portions, said upper and lower portions each having aligned pairs of openings therethrough extending substantially along a longitudinal axis of the back plate,

a tree structure including an elongated trunk portion composed of upper and lower sections adapted to be telescopically connected in longitudinal alignment, said upper and lower sections each having a plurality of openings therein, and a plurality of artificial branch members inserted in said openings and radiating outwardly from the trunk sections to form an artificial tree,

a plurality of strands of wire extending around said trunk sections, each strand of wire passing through one pair of said openings in the back plate so as to secure said trunk sections to one side of the back plate,

a buffer sheet of material covering the opposite side of said back plate,

mounting means connecting said back plate to the pivotal door, said mounting means including an upper bracket attached to the upper portion of the back plate, said upper bracket having a downwardly opening groove adapted to receive the upper edge of the door so as to suspend the back plate from the upper edge of the door, a lower bracket having an upwardly opening groove adapted to receive the lower edge of the door, and turnbuckle means having one end secured to said lower portion of the back plate and an opposite end secured to said lower bracket whereby manipulation of said turnbuckle will tighten the back plate between said upper and lower brackets, and

a boot of generally semi-cylindrical configuration suspended from said lower portion of the back plate adjacent the lower edge thereof a cover for the turnbuckle means.

3,857,749
JOINED CARPET UNIT
Iwao Yoshida, Kyoto, Japan, assignor to Sanwa Kako Co., Ltd., Kuze-gun Kyoto-fu, Japan
Continuation of Ser. No. 229,301, Feb. 25, 1972, abandoned. This application Feb. 19, 1974, Ser. No. 443,633
Claims priority, application Japan, Feb. 26, 1971, 46-11302; Feb. 27, 1971, 46-11845; Mar. 1, 1971, 46-12054
Int. Cl. B32b *1/04, 27/32, 3/10, 5/18*
U.S. Cl. 161—44 **4 Claims**

1. A carpet unit in the form of plate composed of a processed fiber material bonded on the surface of a base plate of foamed material composed of a polymer consisting mainly of ethylene and wherein a plurality of concavities are formed on

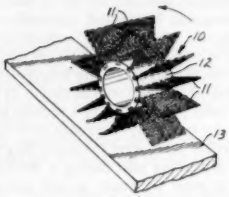
a side surface of said plate and a plurality of alternating convexities are located thereon such that the said carpet unit is

adapted to be joined with a plurality of said units with corresponding concavities and convexities.

3,857,750
SHOT PEENING

Phillip M. Winter, White Bear Lake, and Gary A. Gardner, Saint Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 59,850, June 25, 1970, Pat. No. 3,778,241, which is a division of Ser. No. 746,366, July 22, 1968, Pat. No. 3,638,464. This application June 4, 1973, Ser. No. 366,646
Int. Cl. B32b *5/16*
U.S. Cl. 161—87 **3 Claims**



1. As a new article of manufacture, having particular utility for fabricating flaps for use in a unitary self-contained portable rotary peening device, having an annulus of said flaps united at their inner ends to a rigid core, comprising in combination:

a nonwoven lofty sheet material having a thickness of about one centimeter, a tensile strength of about 16 kg/cm and being formed of randomly disposed crimped nylon filament segments having diameters of 40–200 microns:

relatively smooth, hard impact-resistant inorganic spheroidal peening particles having average diameters in the range 0.1 – 2.5 mm, dispersed throughout said sheet material in an amount equal to about 400 – 700 cc/m² of sheet surface; and

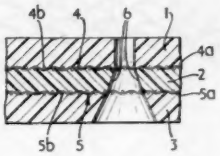
a tough strong elastic adhesive, having an ultimate elongation of at least 100%, bonding said filament segments to each other at loci of intersection and also bonding said particles to said fibers while surrounding more than half of the effective diameters of said particles.

3,857,751
COMPOSITE SHEET CAPABLE OF WITHSTANDING IMPINGEMENT BY PARTICULATE MATERIALS

Leland Harnden Jacobs, Darlingscott, near Shipston-on-Stour, England, assignor to Tufdura Limited

Filed Nov. 15, 1971, Ser. No. 198,817
Int. Cl. B32b *7/02*
U.S. Cl. 161—89 **3 Claims**

1. A composite sheet capable of withstanding impingement by particulate materials and comprising three superimposed layers of elastomeric sheet material of which the inner layer is softer than the two outer layers, a layer of a woven, mesh-like material positioned between each pair of adjacent layers of said elastomeric sheet material, and a bonding material securing the layers of elastomeric sheet material together through said intervening layers of woven, mesh-like material,

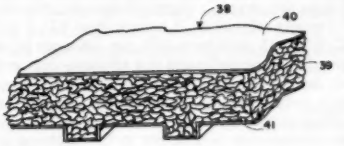


said layers of woven, mesh-like material being held in a resiliently pre-stressed tensile condition in at least one direction of the mesh by the layers of elastomeric sheet material until the bonding of the layers together has been completed.

3,857,752
STRUCTURAL MEMBER EMPLOYING RANDOM HONEYCOMB STRUCTURE

Wallace W. McCoy, 1041 E. Green St., Glendale, Calif. 91101

Division of Ser. No. 15,364, March 2, 1970, Pat. No. 3,664,076. This application Filed Apr. 7, 1972, Ser. No. 242,048
Int. Cl. B32b *5/16*
U.S. Cl. 161—161 **8 Claims**



1. A structural member comprising a continuous skin of resin bonded fiberglass enclosing a filler of random oriented cellulostic particles of at least 70% cellulostic content rigidified with resin compatable with the skin resin and in bonded engagement therewith;

said particles in three dimensional random orientations intersecting in irregular edge to edge, surface to surface and edge to surface junctions with edge fibers of adjacent particles in bonded engagement constituting a mass of rigid material and defining void areas in the order of 80 to 94% of the volume of the filler.

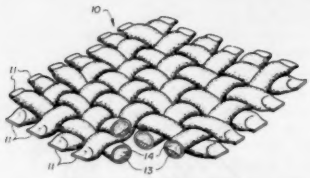
3,857,753
TEMPERATURE ADAPTABLE FABRICS

Ralph H. Hansen, Short Hills, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Division of Ser. No. 818,323, April 22, 1969, Pat. No. 3,607,591. This application Oct. 6, 1970, Ser. No. 81,530
Int. Cl. D01d *5/24;* **G01k** *5/32*
U.S. Cl. 161—178 **3 Claims**

1. A hollow inflatable element having a configuration and construction which makes it suitable for use as a component of a flexible fabric, said element having sealed therein a composition comprising a gas and a solvent which in the liquid state dissolves a greater amount of said gas than when said solvent is in the solid state, the amount of gas sealed in said

element being greater than the amount of gas which can be dissolved by the solvent sealed in said element when said



solvent is in the solid state, whereby when said solvent freezes gas is expelled therefrom and inflates said element

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3,857,754

RESINOUS COMPOSITIONS HAVING IMPROVED PROCESSABILITY AND GAS PERMEATION RESISTANCE AND MOLDED STRUCTURES THEREOF

Sadao Hirata, Yokohama; Muneki Yamada, and Akira Kishimoto, both of Tokyo, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed June 12, 1972, Ser. No. 261,804

Claims priority, application Japan, June 18, 1971, 46-43356; Jan. 4, 1972, 47-5810

Int. Cl. B32b *27/08*; **C08g** *41/04*

U.S. Cl. 161—227 **20 Claims**

1. A molded structure, having an improved gas permeation resistance, said molded structure having been formed by means of extrusion molding from a molten mixture containing (A) a polyolefin and (B) a saponified product of an ethylene-vinyl acetate copolymer having an ethylene content of 25 to 50 mole percent and a degree of saponification of at least 96% at a weight ratio of A : B ranging from 95 : 5 to 75 : 25, and (C) 0.5 to 15 parts by weight, per 100 parts by weight of the sum of said polyolefin and said ethylene-vinyl acetate copolymer saponified product, of a thermopolastic polymer containing a carbonyl group in the main or side chain thereof, said molded structure having a layer structure in which the polymer composition is different in the thickness direction but substantially identical in the plane direction and every two adjacent layers are bonded to each other without any intermediate bonding layer of an adhesive, said layer structure consisting essentially of (a) at least one layer in which the saponified ethylene-vinyl acetate copolymer is predominantly distributed, (b) at least one layer in which the polyolefin is predominantly distributed, and (c) at least one layer which comprises the saponified ethylene-vinyl acetate copolymer and the polyolefin in amounts substantially same as the average contents of the saponified ethylene-vinyl acetate copolymer and the polyolefin in said layer structure, said layer (c) intervening between said layer (a) and layer (b) to bond them integrally, the said carbonyl group-containing thermoplastic polymer being distributed throughout the said layer structure, and wherein when said molded structure is divided in three layers in the thickness direction, at least one layer (a) contains the ethylene-vinyl acetate copolymer saponified product in an amount expressed by following formula

$M_1 = m_1 X$

wherein X is the average content (percent by weight) of the ethylene-vinyl acetate copolymer saponified product in said molded structure, m_1 is a number of from 1.2 to 4, and M_1 is the content (percent by weight) of the ethylene-vinyl acetate copolymer saponified product in said layer, and at least one layer (b) contains the ethylene-vinyl acetate copolymer saponified product in an amount expressed by the following formula

$M_2 = m_2 X$

wherein X is as defined above, m_2 is a number of from 0 to 0.9, and M_2 is the content (percent by weight) of the ethylene-vinyl acetate copolymer saponified product in said layer.

3,857,755

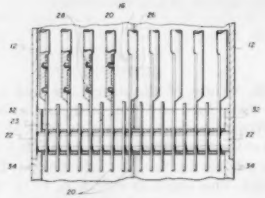
FUEL PIN SECURING APPARATUS

Jackson E. Kinzer, Woodland Hills, and Martin A. Fallandy, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 11, 1971, Ser. No. 123,347

Int. Cl. G21c *3/04*, *3/32*

U.S. Cl. 176—78 **6 Claims**



1. A fuel element assembly for use in nuclear reactors comprising an elongated hexagonal, vertically-oriented metallic housing, a bundle of elongated, cylindrical fuel-containing rods disposed in a triangular array within said housing, including parallel rows of rods extending lengthwise of said housing, each of said cylindrical fuel rods having at its lower end a solid portion, said solid portion having a section partially cut away from the exterior periphery thereof so as to form an outwardly facing flat vertical surface on the remaining part of said solid portion, said remaining part having a thickness greater than one-half the original thickness of said solid portion, spacer strips extending the length of said rows and attached to each of said rods in said rows at a plurality of locations along the length of said outwardly facing flat vertical surface, means to hold said strips in a predetermined spaced relationship in a direction normal to said rows, and means to hold said strips at a predetermined position along the length of said housing.

3,857,756

PROCESS FOR PRODUCTION OF ANTIBIOTIC

Hiroshi Kawaguchi, Tokyo; Koji Tomita, Kanagawa; Hiroshi Tsukiura, Tokyo, and Kyo-ichiro Saito, Kanagawa, all of Japan, assignors to Bristol-Myers Company,, New York, N.Y.

Filed Aug. 30, 1972, Ser. No. 284,795

Int. Cl. C12d *9/00*

U.S. Cl. 195—96 **3 Claims**

1. A process for producing D-*threo*-1-p-nitrophenyl-2-propionamido-1,3-propanediol, which comprises cultivating *Arthrobacter oxamicetus* var. *propiophenicolous*, ATCC 21814, under aerobic conditions in a synthetic aqueous media containing a source of carbon and nitrogenous nutrient until substantial antibiotic activity is produced in said media.

3,857,757

MEANS FOR THE OXYGEN/TEMPERATURE CONTROL OF AEROBIC FERMENTATIONS

Carlyle S. Herrick, Alplaus, N.Y., and James J. Shull, Wayne, Pa., assignors to General Electric Company, Schenectady, N.Y.

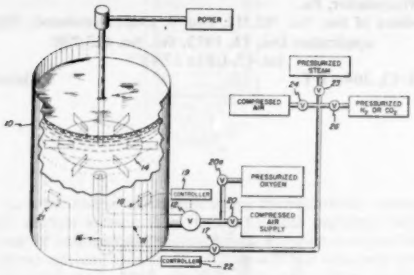
Filed Nov. 30, 1972, Ser. No. 310,862

Int. Cl. C12b *1/14*

U.S. Cl. 195—109 **18 Claims**

12. A process for the conduct of controlled aerobic fermentations comprising the steps of:

a. introducing aerobic microbial culture into an aqueous medium containing requisite nutrients and a source of carbon,
b. raising the oxygen content and temperature of said medium to levels at which the microbial culture can grow and multiply,
c. continuously sensing the temperature of said medium during the growth cycle,
d. continuously sensing the dissolved oxygen content of said medium during the growth cycle,
e. mixing a first gas with said medium continuously during at least part of the growth cycle,



f. mixing a second gas with said medium continuously during at least part of the growth cycle, said first and second gases being introduced simultaneously during only part of the growth cycle and being intimately mixed during the period of simultaneous introduction,
g. automatically controlling the rate of addition of said first gas to said medium in response to the temperature sensing,
h. automatically controlling the rate of addition of said second gas to said medium in response to the sensing of dissolved oxygen in said medium, said second gas being selected from the group consisting of oxygen and air, said first gas being selected from the group consisting of air, steam, nitrogen and carbon dioxide and said first and second gases being different from each other.

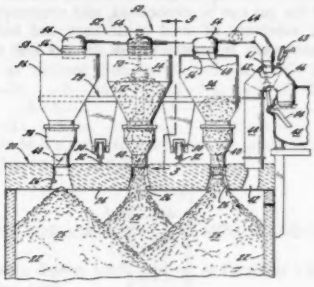
3,857,758

METHOD AND APPARATUS FOR EMISSION FREE OPERATION OF BY-PRODUCT COKE OVENS

Philip J. Mole, Elmwood Park, Ill., assignor to Alvin W. Block; Stephen Levy and Alvin Becker, all of Chicago, Ill., a part interest

Filed July 21, 1972, Ser. No. 274,075
Int. Cl. C10b *31/04*
U.S. Cl. 201—40 **6 Claims**

1. The method of eliminating atmopsheric emissions during charging of by-product coke ovens of the type having charging ports for filling the oven chambers from coal hoppers carried by said oven and said hoppers having top openings for filling the hoppers and bottom discharge openings adapted to be discharged into said ports and a gas collection main having an ascension pipe and elbow including an elbow port opening and cap therefor adjacent said ports comprising the steps of,
a. automatically actuating manifold means including shroud conduits and a closed conduit traversing the tops of the hoppers and intersecting said shroud conduits so that said shroud conduits sealingly cover the tops of the hoppers, said conduit having an induced draft fan disposed therein,
b. connecting the end of the closed conduit from said sealed hoppers to said ascension pipe elbow port opening of said gas collection main,
c. actuating said fan to create an induced draft in said closed conduit directed toward the collection main,
d. positively conducting emissions produced during the charging of the oven chamber up through the hoppers



and through said conduit means into said gas collecting main.

3,857,759

PROCESS FOR PURIFYING 1,3-DIOXOLANE BY TREATMENT WITH NH3 AND DISTILLATION WITH CYCLOHEXANE

Leonardo Fiore; Giorgio Nissim, both of Milan, and Francesco Corrado, Novara, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed June 21, 1973, Ser. No. 372,253
Claims priority, application Italy, June 22, 1972, 26030/72
Int. Cl. B01d *3/36;* **C07d** *13/02*
U.S. Cl. 203—29 **2 Claims**

1. A process for obtaining anhydrous 1,3-dioxolane having a high degree of purity, starting from raw 1,3-dioxolane in admixture with water, which process comprises:
a. The addition of ammonia in quantities sufficient to transform the formic aldehyde and the formic acid present as impurities, into non volatile substances,
b. The subsequent distillation for obtaining a head fraction consisting of dioxolane, water and minor quantities of volatile impurities,
c. The subsequent rectification of the above mentioned head fraction (b), in the presence of cyclohexane, in order to eliminate the water and the other impurities in the form of a head fraction essentially consisting of a ternary cyclohexane/dioxolane/water azeotrope, which head fraction, following condensation, separates into two phases one of which, formed by cyclohexane and dioxolane, is recycled to the rectifying column, while there is obtained as a tail fraction a dioxolane/cyclohexane mixture,
d. The rectification of the dioxolane/cyclohexane mixture for obtaining anhydrous 1,3-dioxolane with a high degree of purity.

3,857,760

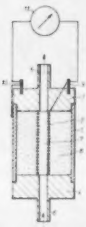
PROCESS OF MEASURING THE CONCENTRATION OF A DISSOCIATABLE COMPONENT IN A GAS AND APPARATUS THEREFOR

Wolfram Breuer; Jacques Deprez, and Burthold Sturm, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 836,007, June 24, 1969, abandoned. This application June 16, 1971, Ser. No. 153,783
Claims priority, application Germany, July 8, 1968, 1773795
Int. Cl. G01n *27/30, 27/46*
U.S. Cl. 204—1 T **30 Claims**

1. An electrolytic cell instrument adapted to measure the concentration of a dissociatable component of a gas, operat-

ing on the principle of a Nernst concentration cell, consisting essentially of two electrodes, an electrolyte disposed in said cell between and in contact with said electrodes, and comprising means for passing the gas into contact with the electrolyte so that the gas can be dissociated, said electrolyte being an organic substance of solid consistency and being a non-aqueous system, for contacting of the gas with the organic

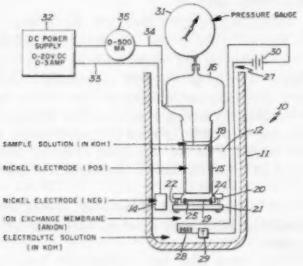


electrolyte for dissociation of said gas component in the organic electrolyte to an extent proportional to the concentration of the dissociatable component in the gas for generation of an electromotive force to an extent proportional to the concentration of the dissociatable component in the gas and means adapted to connect said electrodes and measure the electromotive force as a measure of the dissociatable component in the gas.

3,857,761
EXHAUSTIVE ELECTROLYSIS METHOD FOR DETERMINATION OF OXYGEN DEMAND

John P. Cummings, Minneapolis, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Division of Ser. No. 58,448, July 27, 1970, abandoned. This application Dec. 1, 1972, Ser. No. 311,335
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **6 Claims**



1. The method of quantitatively determining the oxygen demand of aqueous samples comprising;

a. placing an aqueous sample for oxygen demand determination into an electrolytic cell having a pair of electrodes in contact with said sample and including an anode disposed within an anode compartment, a cathode disposed remote from said anode compartment and an ion permeable membrane in contact with said sample to provide an electrolytic bridge between said anode and said cathode;

b. adding an alkali metal hydroxide to said sample until the pH of said sample is in excess of about **10**;

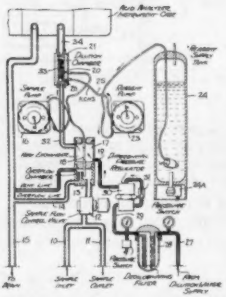
c. applying an electrolyzing current across said electrodes at a potential suitable for the generation of oxygen along the sample contacting surface of the anode until the sample is substantially electro-inactive while maintaining said sample at a substantially constant temperature; and

d. measuring the partial pressure of oxygen evolved from said anode-sample interface during said electrolyzing current application when said sample is substantially electro-inactive.

3,857,762
CONTINUOUS ANALYSIS FOR COPPER CONCENTRATION

James J. Morrow, Norristown, and Leo L. Dailey, Philadelphia, both of Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Division of Ser. No. 782,212, Dec. 9, 1968, abandoned. This application Dec. 11, 1973, Ser. No. 423,758
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **5 Claims**



1. A technique for continuously measuring the concentration of cupric copper in an aqueous solution comprising the steps of adding potassium thiocyanate to a sample of said cupric copper solution in a dilute solution to form cupric thiocyanate, passing said cupric thiocyanate through an electrochemical cell operating at a voltage acting to reduce it to cuprous thiocyanate thereby inducing an electric current in the cell which is directly proportional to copper concentration, and measuring the current to indicate the copper concentration.

3,857,763
RECOVERY OF ELECTROLYTIC DEPOSITS OF RHODIUM

Donald W. Du Bois, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

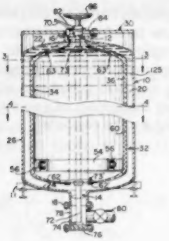
Filed Nov. 24, 1972, Ser. No. 309,047
Int. Cl. C22d *5/00*; C23b *5/24*; C22d *1/12*
U.S. Cl. 204—10 **13 Claims**

1. A method for removing electrodeposits of rhodium from the surface of an electrode, said surface being dissolvable by hydrofluoric acid, which comprises contacting such deposits with a dilute solution of hydrofluoric acid for a time sufficient for the hydrofluoric acid to undermine the deposit and recovering rhodium removed from the electrode.

3,857,764
ELECTROCHEMICAL PROCESSING OF INNER SURFACES OF LARGE VESSELS

John F. Jumer, 16 West Timber Trails Dr., Elmhurst, Ill. 60126

Division of Ser. No. 173,581, Aug. 20, 1971, Pat. No. 3,772,163. This application July 23, 1973, Ser. No. 381,693
Int. Cl. C23b *5/56, 5/68*
U.S. Cl. 204—26 **3 Claims**



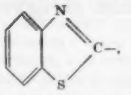
1. A method of electroprocessing the electrically conductive interior surface of a stationary large capacity upright vessel of uniform cross section having at least one top and one bottom opening therein which openings are relatively small compared to the girth of said vessel, comprising: securing anchor means in said bottom opening; attaching to said anchor means inflatable buoyant electrolyte displacer means having a uniform cross-sectional shape when inflated corresponding generally to that of the interior side wall of said vessel but having a height when inflated that is substantially shorter than the height of said vessel and inflating said displacer means until the exterior side wall surface thereof is adjacent to said interior side wall surface with approximately uniform space therebetween; covering the exterior side wall surface of said inflated electrolyte displacer means with an endless electrode, operatively connecting position control means with said inflated electrolyte displacer means so as to permit raising and/or lowering thereof through at least one said top opening; introducing and maintaining an electrolyte in substantially the entire space separating said exterior surface of said electrolyte displacer means from said interior surface of said vessel, the actual amount of electrolyte in said vessel being substantially less than the capacity thereof, and the combined volumes of said electrolyte and said submerged electrolyte displacer means being substantially equal to said vessel capacity; passing an electrical current through said electrolyte between said electrode and said interior surface; and, raising and/or lowering said inflated electrolyte displacer means to electroprocess all of said interior side wall surface.

3,857,765
PURIFICATION OF NICKEL AND COBALT ELECTROPLATING SOLUTIONS

Reuven Merker, Engelwood Cliffs, and Salvatore Lucca, Paramus, both of N.J., assignors to The Metalux Corporation, Peterson, N.J.

Filed Sept. 20, 1973, Ser. No. 398,963
Int. Cl. C23b *5/08*
U.S. Cl. 204—49 **3 Claims**

1. In the process wherein a metal selected from nickel and cobalt is electrodeposited from an aqueous acidic solution containing ions thereof, wherein said solution is at least periodically fed through a filtration chamber to remove impurities therefrom, and wherein, during use, metallic impurities selected from the group consisting of zinc, copper and iron build up in solution; the improvement in said process wherein there is added to the solution in amounts sufficient to precipitate the metallic impurities, whereby the metallic impurities are filtered out of said solution, an organic compound having the general formula *a*—S—X, wherein *a* represents the radical

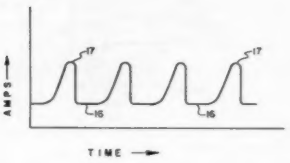


S is sulphur, and X is one of the following: —H, —Na, —K, —Li, —*a* as defined hereabove, —S—H, —S—S—H, —S—S—S—H, —S—Na, —S—S—Na, —S—S—S—Na, —S—K, —S—S—K, —S—S—S—K, —S—S—Li, —S—S—S—Li, —S—S—*a*, —S—S—*a*, —S—S—S—*a*, —M—S—*a* wherein M is a metal selected from the group consisting of Ni, Co, Ag, Au, Cr, and Mn.

3,857,766
PROCESS FOR ANODIZING ALUMINUM AND ITS ALLOYS

Jack L. Woods, Ogden, Utah, assignor to Permaloy Corporation, Ogden, Utah

Filed Aug. 3, 1972, Ser. No. 277,578
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 **5 Claims**



1. A process for anodizing an object of aluminum or aluminum alloy comprising

placing said object as an anode in an anodizing electrolyte contained within an electrolytic cell housing, said housing being a cathode and being continually connected to a negative current potential; and

subjecting the anode to a continually applied position direct current having an average direct positive current voltage interspersed with applied peaked pulses of higher level positive current voltage, said peaked pulses having a wave pattern such that the time from average current to peaked pulse current is greater than the time from peaked pulse current back to average current, for a period of time sufficient to anodize the object with a coating of desired thickness.

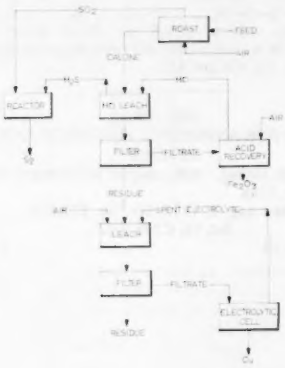
3,857,767
RECOVERY OF COPPER FROM CHALCOPYRITE ORE CONCENTRATES

Robert C. Gabler, Jr., Grasonville; Earle B. Amey, Greenbelt; Beverly W. Dunning, Jr., Adelphi; Carl E. Goldsmith, Brandywine, all of Md., and Howard W. Leavenworth, Jr., Washington, D.C., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed June 7, 1974, Ser. No. 477,229
Int. Cl. C22d *1/16*; **C22b** *1/02*
U.S. Cl. 204—108 **3 Claims**

1. A process for recovery of copper from chalcopyrite ore concentrate comprising (1) partially roasting the concentrate at a temperature and for a time sufficient to produce a calcine consisting essentially of bornite and troilite, (2) leaching the

calcine with hydrochloric acid solution having a concentration of about 9.7 to 9.8 weight percent hydrogen chloride to remove iron and (3) dissolving the copper sulfide residue to form an electrolyte suitable for electrowinning copper.



3,857,768

PROCESS FOR RADIATION CROSS-LINKING POLYMETHYL ACRYLATE-METHYL ACRYLATE COMPOSITIONS

Tsutomu Kagiya, Kyoto; Hiroshi Mitsui, Takasaki; Kazuyoshi Tsuneta, Takasaki, and Hiroshi Mihara, Takasaki, all of Japan, assignors to Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

Continuation of Ser. No. 83,594, Oct. 23, 1970, abandoned. This application Nov. 15, 1972, Ser. No. 306,855

Claims priority, application Japan, Oct. 28, 1969, 44-85664; Dec. 6, 1969, 44-97674

Int. Cl. C08d *1/00;* **C08f** *1/00*

U.S. Cl. 204—159.16 **13 Claims**

1. A process of preparing a cross-linked resin composition which comprises irradiating with ionizing radiation a cross-linkable composition consisting essentially of methyl acrylate monomer and polymethyl acrylate and being devoid of a catalyst or cross-linking agent, said polymethyl acrylate constituting at least 0.5 percent by weight of the composition.

5. A process of preparing a cross-linked resin composition which comprises irradiating with ionizing radiation a cross-linkable composition consisting essentially of a monomeric component and a polymeric component, said monomeric component consisting essentially of methyl acrylate and a vinyl monomer selected from the group consisting of vinyl acetate, ethyl acrylate, alkyl methacrylate, acrylonitrile and mixtures thereof, said polymeric component essentially consisting of methyl acrylate copolymer containing at least 1 mole per cent of methyl acrylate units, said polymeric component constituting at least 0.5 percent by weight of the composition, said cross-linkable composition being devoid of a catalyst or cross-linking agent.

3,857,769

PHOTOPOLYMERIZABLE COATING COMPOSITIONS AND PROCESS FOR MAKING SAME WHICH CONTAINS A THIOXANTHONE AND AN ACTIVATED HALOGENATED AZINE COMPOUND AS SENSITIZERS

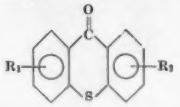
Vincent Daniel McGinniss, Middleburg Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Filed Nov. 8, 1973, Ser. No. 413,830

Int. Cl. C08d *1/00;* **C08f** *1/16*

U.S. Cl. 204—159.24 **6 Claims**

1. A process for polymerizing an ethylenically unsaturated polymerizable vehicle in which a pigment is dispersed in a pigment-to-vehicle ratio of 1:10 to 1:1 to form a pigmented composition by exposure to ultraviolet radiation, which comprises incorporating into said vehicle an ultraviolet sensitizer proportion consisting essentially of (a) a thioxanthone compound as represented by the formula:



wherein R_1 and R_2 which can be like or unlike, are H, Cl, Br, OH, NH_2 or lower alkyls, and (b) an azine compound selected from the group consisting of benzazines, benzodiazines, and diazines, said azine compound characterized by having a substituted activated halogenated moiety selected from halosulfonyl, α-haloalkyl, and α-haloalkylated aryl; said thioxanthone compound being present from about 0.5 to 4.0 percent by weight, and said azine compound being present from about 0.3 to 6.0 percent by weight, based on the weight of the composition.

3,857,770

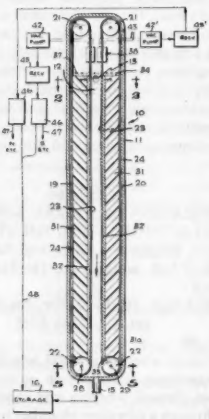
REMOVAL OF CONTAMINANTS FROM HYDROCARBON LIQUIDS

Howard F. Keller, Fullerton, Calif., assignor to Global Environmental Technologist Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 867,507, Oct. 20, 1969, abandoned. This application Jan. 3, 1972, Ser. No. 214,959

Int. Cl. B03c *5/00;* **C01g** *15/00*

U.S. Cl. 204—188 **17 Claims**



1. The process that comprises contacting two spaced electrodes with a hydrocarbon liquid containing contaminant molecules, consisting essentially of hydrocarbon molecules containing sulfur, nitrogen, vanadium and/or nickel, which are dissolved in the liquid and in which the effective centers of the

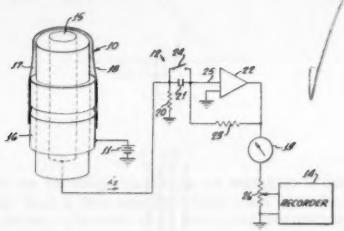
positive and negative electrical charges of the individual contaminant molecules are separated from one another, giving the molecules a dipole moment; applying electrical charges of opposite polarity to said electrodes respectively from opposite sides of a direct current power source; causing migration of at least some of said contaminant molecules toward one of said electrodes by attraction thereto of electrical dipole charges of the individual molecules; and separating said attracted contaminant molecules, while still in solution in the hydrocarbon liquid in concentrated amounts, from the portion of the hydrocarbon liquid from which they have migrated.

3,857,771

RATE SENSING BATCH ANALYZER

James C. Sternberg, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 27, 1967, Ser. No. 618,859
Int. Cl. G01n *27/46, 31/14*
U.S. Cl. 204—195 B **16 Claims**



1. A rate sensing batch analyzer comprising:

sensor means for monitoring the concentration of a component or product of a reaction and producing a first output signal proportional to the concentration thereof;

differentiator circuit means coupled to said sensor means and responsive to said first output signal for producing a second output signal proportional to the time derivative of said first output signal and thus proportional to the time rate of change of concentration of said component or product; and

means coupled to said differentiator circuit means for measuring the maximum value of said output time rate of change signal for obtaining an accurate measurement of true instantaneous rate at a very early stage of the reaction, said measured maximum value being directly proportional to initial concentration of said component or product.

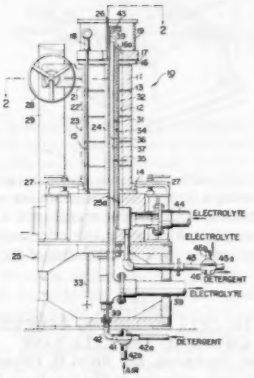
3,857,772

ELECTROPLATING APPARATUS FOR SIMULTANEOUSLY AND UNIFORMLY ELECTROPLATING INSIDE SURFACES OF ANNULAR BODIES

Toshiro Sasaki, Hiroshima; Michio Oka, and Yoshiaki Washio, both of Kure, all of Japan, assignors to Toyo Kogyo Co., Ltd., Aki-gun, Hiroshima-ken, Japan

Filed Dec. 26, 1972, Ser. No. 318,649
Claims priority, application Japan, Dec. 25, 1971, 46-3011
Int. Cl. C23b *5/74;* **B01k** *3/00*
U.S. Cl. 204—224 R **2 Claims**

1. An electroplating apparatus for simultaneously and uniformly electroplating the inside surfaces of a plurality of annular bodies placed upon one another so that their central bores are registered comprising: an upright anode about which said annular bodies are to be placed with the inner surfaces equidistantly spaced from the outer surface of said anode to thereby define therebetween an annular passage; a plurality of seats respectively separating adjacent ones of said annular bodies to electrically insulate the same from each other; means for forcing an electrolyte through said passage; an elongated cathode conductor for applying a negative potential to said annular bodies; said cathode conductor being substantially vertical and constituting a single member having a considerable intrinsic resistance, said cathode conductor having individual means along its length to apply a different negative



potential to each of said annular bodies with the negative potential increasing in the direction of flow of the electrolyte, so that the effective electric current flowing between said anode and the respective annular body is substantially equal even though the electric conductivity of the electrolyte differs along said passage due to the generation of gases in the electrolyte.

3,857,773

SUPPRESSION OF CREVICE CORROSION IN GASKETED TITANIUM CREVICES BY THE USE OF RUBBER COMPOUND GASKETS SUBSTANTIALLY FREE OF CALCIUM

Donald W. Du Bois, and William B. Darlington, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 5, 1973, Ser. No. 348,452
Int. Cl. B01k *3/00;* **C01d** *1/06;* **C01b** *7/06*
U.S. Cl. 204—242 **8 Claims**

1. A method of preventing crevice corrosion which is encountered between a pair of closely spaced surfaces during electrolysis under acidic conditions in an electrolytic cell wherein at least one of said surfaces is titanium which method comprises providing a rubber gasket between said surfaces in contact with the titanium which rubber gasket contains less than 0.07 weight percent calcium, determined by atomic absorption spectroscopy, whereby said gasket is substantially free of calcium.

3,857,774

CATHODES FOR ELECTROLYTIC CELL

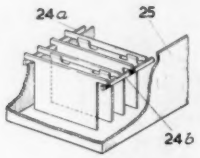
Peter Harlow Morton, Solihull; John Philip Atkinson Wortley, Birmingham, and Alan Woolcock, Lichfield, all of England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, Warwickshire, England

Filed June 25, 1973, Ser. No. 373,313

Claims priority, application Great Britain, Jan. 26, 1973, 4132/73

Int. Cl. B01k *3/04;* C23b *5/68*

U.S. Cl. 204—242 17 Claims



1. An electrolytic cell including an anode and a cathode, the cathode comprising a hanger bar of aluminium or copper at least partly sheathed with a valve metal, and a continuous sheet of valve metal welded along one edge only to at least part of the length of the valve metal sheath of the hanger bar.

3,857,775

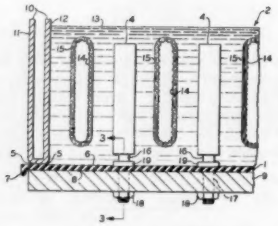
ELECTROLYTIC CELL INCLUDING A FLEXIBLE SHEET COVERING THE CELL BASE

Harry S. Custer, Barberton, and Brian H. Oliver, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 251,751, May 9, 1972, abandoned. This application June 18, 1973, Ser. No. 371,323

Int. Cl. B01k *3/10*

U.S. Cl. 204—252 13 Claims



1. In an electrolytic cell of the diaphragm type for the production of chlorine, said cell comprising a cell can for containing a brine solution, a conductive metal cell base supporting said can and anode members disposed within said can and extending through said base; a flexible heat-resistant elastomeric sheet covering and in contact with said cell base and subjected to the heat generated by the conductive metal of the cell base, said sheet comprised of a vulcanized heat-resistant blend of a first vulcanized rubbery polymer which will soften under the prolonged influence of heat wherein said first polymer is a polyisoprene selected from the group consisting of natural rubber and synthetic rubber of a cis 1,4-polymer of isoprene and a second vulcanized heat-resistant rubbery polymer which will harden under the prolonged influence of heat wherein said second polymer is at least one polymer selected from the group consisting of halogenated butyl rubber, ethylene propylene terpolymer rubber, a copolymer of butadiene and acrylonitrile, a copolymer of butadiene and styrene and a chlorosulfonated polyethylene and wherein the weight ratio of said polyisoprene to said second polymer is from about 35/65 to about 65/35, said sheet, due to the combined effects of said first and second polymers, thereby retaining its flexible resilient characteristics to provide a seal between the anode member and the cell base and between the cell base and the brine solution contained in the can.

3,857,776

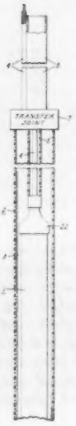
DEEP SUBMERSIBLE POWER ELECTRODE ASSEMBLY FOR GROUND CONDUCTION OF ELECTRICITY

Charles H. Titus, Newtown Square, and J. Kenneth Wittle, Berwyn, both of Pa., assignors to Electro-Petroleum, Inc., Bryn Mawr, Pa.

Filed June 14, 1973, Ser. No. 369,948

Int. Cl. B01k *3/04;* E21b *43/00;* B01k *3/08*

U.S. Cl. 204—290 R 8 Claims



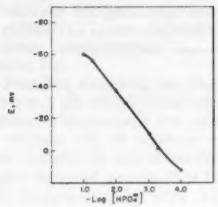
1. In a deep submersible and consumable high voltage power anode assembly for direct underground installation exposed to a surrounding mixture of saline and oleaginous fluids under a hydrostatic pressure head of the order of at least several hundred feet, an elongate electrode body including a tubular sheath of insulating material and having at one end a terminal for connection to a source of positive unidirectional voltage of the order of at least 200 volts above ground potential, said tubular sheath conductively exposing to said fluid mixture only an end face of said electrode body opposite said one end, a rigid and substantially fluid impervious tubular insulating shield enclosing the side walls of said electrode body, and exposing said end face, said electrode body and shield being designed to be eroded axially at said end face and at substantially the same linear rates as a result of electrochemical action by electric current passing between said end face and said fluid mixture, a fluid passage defined at least in part by said electrode body and traversing said body for substantially the full axial length thereof, said passage having an outlet port adjacent said exposed end face, and means for introducing in electrolytic fluid into said fluid passage at said one end of said electrode body and maintaining said electrolytic fluid under pressure greater than the hydrostatic pressure of said surrounding fluid mixture, whereby said electrolytic fluid traverses said fluid passage to cool said electrode body and bathe said end face in conductive fluid.

3,857,777

ION EXCHANGE MEMBRANE FOR MEASURING ORTHOPHOSPHATE

George G. Guilbault, New Orleans, La.; Frank R. Shu, Hsinchu, China /Taiwan, and Henning Von Storp, Heidesheim, Germany, assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Filed Aug. 10, 1973, Ser. No. 387,569
Int. Cl. B01k 3/10
U.S. Cl. 204—296 4 Claims



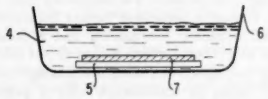
1. An ion exchange membrane to segregate a reference electrode from a fluid sample, which when both the segregated reference electrode and a measuring electrode are suspended in a fluid sample that contains a specific ion from a class of large molecule anions, results in a potentiometric value for said measuring electrode and fluid sample when measured against said reference electrode, and wherein the potentiometric value varies predominantly with the variation in concentration of said specific ion rather than with the variation of concentration of other solute species, wherein said membrane comprises, a thiourea-aldehyde polymer, silver ion and a phosphate ion.

3,857,778

METHOD OF RENDERING ELECTROPHORESIS MEMBRANE TRANSPARENT

Nobuo Hiratsuka, and Kiyotaka Shimoda, both of Ashirgara-machi, Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 3, 1971, Ser. No. 195,420
Claims priority, application Japan, Nov. 4, 1970, 45-96404
Int. Cl. B01k 5/00
U.S. Cl. 204—299 R 9 Claims



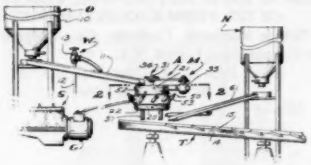
1. A method of rendering a cellulose ester electrophoretic membrane transparent comprising the steps of:
immersing the membrane in an alcohol solution to impregnate said membrane,
withdrawing the impregnated membrane from said alcohol, placing the impregnated membrane on a support, thereby excluding air from the pores of said membrane,
immersing the supported alcohol-impregnated membrane in an ether and,
removing and drying the membrane.

3,857,779

ELECTRIC DISCHARGE METAL CONVERTER

Paul M. Harris, 2401 Shadow Hill Dr., Riverside, Calif. 92506, and Shelby D. Adamson, 764 E. 23rd St., San Bernardino, Calif. 92404

Filed Nov. 3, 1971, Ser. No. 195,422
Int. Cl. B23p 1/02; B01k 3/00
U.S. Cl. 204—544 10 Claims



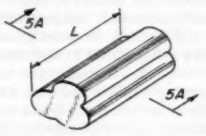
1. A metal converter comprising an elongate vertical dielectric body with open upper and lower ends and a vertical flow passage therethrough to continously receive and conduct a slurry of water and ore, a plurality of anode contacts carried by the body in a common plane normal to the axis of the flow passage and in spaced relationship thereabout and disposed inwardly toward said axis, a direct current power supply connected with the anode contacts, a flow directing and grounded conductor structure within the flow passage in spaced relationship with the body and anode contacts to direct the slurry in close proximity to the anode contacts and having a plurality of cathode contacts in a common plane with the anode contacts and disposed radially outward relative to said axis and adapted to direct electron flow from the anode contacts to the conductor structure and to support electric arcs with and between the anode and cathode contacts when in spaced relationship therewith whereby the ore in the flow passage and directed by the contacts is converted to metal by the arcs between the contacts and through the slurry.

3,857,780

HYDROFORMING PETROLEUM FRACTIONS IN GAS PHASE USING SHAPED CATALYST PARTICLES

William Roy Gustafson, 124 Horse Tavern Rd., Trumbull, Conn. 06611

Continuation-in-part of Ser. No. 255,491, May 22, 1972, abandoned. This application Aug. 3, 1973, Ser. No. 385,518
Int. Cl. C10g 35/08
U.S. Cl. 208—139 7 Claims



1. In a process of hydroforming a petroleum fraction wherein said petroleum fraction is contacted in gaseous phase with hydrogen and with catalyst particles comprised of an extruded porous alumina base carrying a promoter selected from platinum and mixtures thereof with rhenium, gallium, germanium, iridium, rhodium, and zinc, the improvement which comprises said catalyst particles having a polylobal cross-sectional shape, said polylobal cross-sectional shape being such that the number of lobes is 2 to 5 and said lobes are defined by circles, all of said circles in said cross-sectional shape having equal diameters, the centers of said circles being spaced from one another by a distance which is from about 3/4 to 15/16 of the diameters of said circles and when more than

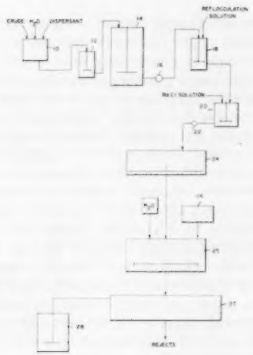
two lobes are present, lines connecting the centers of adjacent circles form a substantially equilateral polygon each side of which is from about 3/8 to 15/16 of the diameters of said circles and all of said cross-sectional shape included by said circles being of said porous alumina.

3,857,781

METHOD OF RAPID DIFFERENTIAL FLOCCULATION OF TiO_2 FROM KAOLIN SLURRIES

Robert Nelson Maynard, Cochran, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

Filed June 8, 1972, Ser. No. 263,730
Int. Cl. B03b *1/04*
U.S. Cl. 209—5 **6 Claims**



1. A method of beneficiating kaolin clay consisting essentially of the steps of:

a. treating an aqueous kaolin clay suspension of from 45 to 70 percent solids by weight with a dispersing agent in an amount in excess of that required to obtain minimum viscosity, said dispersing agent comprising the combination of sodium hexametaphosphate and sodium silicate; continuing the addition of said sodium hexametaphosphate and said sodium silicate to effect reflocculation of said aqueous kaolin clay suspension; the combined amount of said sodium hexametaphosphate and said sodium silicate being added to said aqueous suspension comprising from 2 to 10 pounds per ton of dry clay of sodium hexametaphosphate and from 8 to 20 pounds per ton of dry clay of sodium metasilicate so as to obtain said minimum viscosity and reflocculation but comprising an amount less than which produces an intractable gel state;
b. diluting said reflocculated slurry to from 25 to 45 percent solids;
c. treating said slurry by adding to it from 4 to 50 pounds per ton of dry clay of sodium chloride;
d. aging said salt treated slurry for from 1 to 24 hours;
e. further diluting said aged slurry to from 10 to 35 percent solids;
f. adding to and mixing within said diluted aged slurry from 0.01 to 0.3 pounds per ton of dry clay of a water soluble, strongly anionic polyacrylamide polymer having a molecular weight in excess of one million, whereby a separation of titanium-polymer flocs is effected from said suspension at a sedimentation rate in excess of 10 minutes per inch of depth of said slurry, and
g. separating the thus refined slurry from said flocs.

3,857,782

SEMIPERMEABLE MEMBRANE PROCESS AND DEVICE EMPLOYING AN AMINOETHYLATED POLYMERIC MATERIAL AS THE SEMIPERMEABLE MEMBRANE

Richard P. Crowley, Wellesley Hills, Mass., assignor to Abcor, Inc., Cambridge, Mass.

Division of Ser. No. 35,248, May 6, 1970, abandoned. This application Nov. 4, 1971, Ser. No. 195,881
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—22 **9 Claims**

1. In a separatory process which comprises: exposing under fluid pressure one side of a selected polymeric permeable membrane to a fluid having at least one component permeable to said membrane, and separating that portion of the fluid which permeates the membrane from that portion of the fluid which does not permeate the membrane, the improvement which comprises:

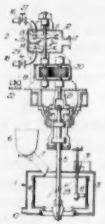
employing as the selected permeable polymeric membrane material a polymer selected from the group consisting of polyethylene imine and a polyamide containing reactive NH groups and modified by the reaction of the NH groups of the polyamide with an ethylene imine to contain from about 5 to 60 percent by weight ethylene imine, generally in the form of polyethylene imine grafts thereon.

3,857,783

SUSPENDED TYPE CENTRIFUGAL SEPARATOR

Shiro Nishimura, Tokyo, and Kisaburo Ishihama, Mitaka, both of Japan, assignors to Shin Nippon Machinery Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1973, Ser. No. 346,293
Int. Cl. B01d *21/26;* **B04b** *9/06, 13/00*
U.S. Cl. 210—138 **5 Claims**



1. A steam turbine driven suspended type centrifugal separator comprising in combination a suspended type centrifugal separator unit having a separator basket rotatable within a casing, a speed reducing mechanism and a steam turbine means wherein said steam turbine means drives said separator basket through said speed reducing mechanism such that the speed thereof varies in accordance with a predetermined pattern with respect to time during short cycles said steam turbine means comprising a turbine casing, a turbine shaft rotatably supported in said turbine casing, a first turbine rotor fixedly mounted on said turbine shaft and rotated in the normal direction, a second turbine rotor fixedly mounted on said turbine shaft and rotated in the reverse direction, a first steam conduit for supply pressurized steam to said first turbine rotor, a second steam conduit for supplying pressurized steam to said second turbine rotor, a first steam valve provided in said first steam conduit, a second steam valve provided in said second steam conduit and a steam exhaust port provided in the turbine casing, an actuator for operating said first steam valve, means for generating a set of voltages varying in accordance

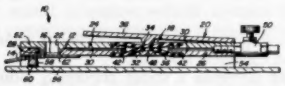
with said predetermined speed pattern of said centrifugal separator unit, means for sequentially selecting one of said set of voltages, means for detecting the speed of the centrifugal separator, means for generating a voltage proportioned to the detected speed, and means for generating a voltage proportional to the instantaneous difference between said selected one of said set of voltages and said voltage proportional to the detected speed, said actuator being operative in response to said voltage difference for controlling said first steam valve.

3,857,784

APPARATUS FOR APPLYING AND DRYING CHROMATOGRAPHIC SAMPLES

Sylvia Martinez, Coral Gables, Fla., assignor to SINDCO, Coral Gables, Fla.

Filed Oct. 27, 1972, Ser. No. 301,583
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 C **11 Claims**



1. A simple, portable, manually actuatable apparatus for use in the application to a chromatographic test surface, and in the drying on the test surface, of one or more samples of a liquid substance to be dried and analyzed, comprising, in combination:

a. a base structure adapted to be supported on a table top or the like and providing

i. a defined area within the confines of which a sample-receiving portion of the test surface may be located, and

ii. a conduit system for directing a flow of a drying gas from an intake section of said conduit system to a discharge section thereof at said defined area and there to each location of a sample on the test surface, said conduit system including an open-shut valve means intermediate said intake and discharge sections and positioned for actuation from exteriorly of said base structure;

b. means for establishing communication between said intake section of said conduit system and a source of drying gas under pressure and including means for regulating the flow of drying gas into said conduit system; and

c. a manually displaceable operating member hingedly connected to said base structure, said operating member having an adjunct arranged to operate said valve means so as to close the latter when said operating member is engaged and pressed toward said base structure by the hand of an operator;

d. whereby the flow of drying gas to said defined area can first be interrupted by the hand of the operator while a sample is being applied to the test surface and can then be renewed simply by the lifting of the operator's hand, so that

i. drying of the portion of the liquid substance which remains in the applicator device during the application of each sample to the test surface is prevented, and

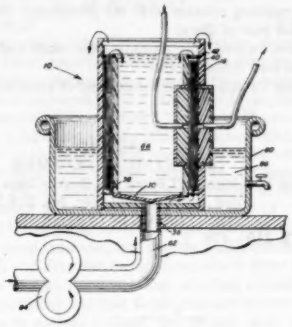
ii. drying of the sample can nevertheless be commenced immediately after the application thereof to the test surface.

3,857,785

ARTIFICIAL KIDNEY APPARATUS

F. Jesus Martinez, Palatine, Ill., assignor to Baxter Laboratories, Morton Grove, Ill.

Division of Ser. No. 26,547, April 8, 1970, Pat. No. 3,712,474.
This application Oct. 18, 1972, Ser. No. 298,725
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **4 Claims**



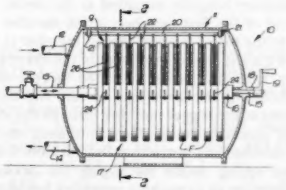
1. A connector member for connecting tubing to a transversely larger, flexible, sheath-like conduit, said connector comprising a resilient body elongated and of generally oval shape in one direction and including a transverse bore, means for supporting and retaining said tubing within said bore, and means for confining in fluid-tight relationship said sheath-like conduit around the periphery of said body, said last named means comprising a relatively inflexible cup member having a bottom end defining an opening therein, said body being sealingly positioned within said cup member, said tubing being positioned within said bore and also positioned to pass through said opening, said sheath-like conduit being secured in fluid-tight relationship between said resilient body and said cup member, the surface of said body defining a plurality of grooves communicating with one end of said transverse bore and positioned to communicate with the interior of said conduit to facilitate the uniform distribution of fluid passing between said sheath-like conduit and said tubing, said grooves all extending in directions normal to the axes of said bore and sheath-like conduit.

3,857,786

BRUSHING ACCESSORY FOR SPIN FILTER

Leonard H. Wolf, Jr., 1109 N. Sunrise Way, Palm Springs, Calif. 92262

Filed Oct. 29, 1973, Ser. No. 410,791
Int. Cl. B01d *29/34*
U.S. Cl. 210—331 **3 Claims**



1. A brushing accessory for a spin filter mounted in a tank for confining a liquid to be filtered and comprising a rotatable

hollow mandrel on which a series of spaced filter discs are concentrially mounted in spaced relation, said accessory comprising:

a bar located inside said tank parallel with said mandrel and between said filter discs and said tank;

means for mounting said bar on said tank;

a series of parallel brushes spaced apart equidistant with the spacing of said filter discs with one brush being disposed between each adjacent pair of said discs and in constant scrubbing relation with the juxtaposed filtering faces of said pair of discs;

means for rotatably mounting the inner end of each brush on said mandrel; and

means for attaching the outer end of each brush to said bar.

3,857,787

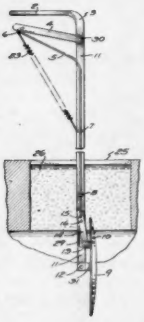
MECHANICAL SKIMMER

Howard R. Kinne, 147 Front St., Beaver Dam, Wis. 53916

Filed Jan. 17, 1972, Ser. No. 218,214

Int. Cl. B01d *35/28*

U.S. Cl. 210—470 **4 Claims**



1. A mechanical ice fishing skimming assembly, comprising: A first member having a handle section therewith, and said first member being an elongated rigid metal arm having a plurality of guide supports extending therefrom, said supports having openings therein, a rod extending substantially from one end of the arm to the other and being moveably mounted along the arm and through the openings in the support for controlled and defined movement, a trigger member pivotally mounted on said arm and operable with the handle section and having connected at its extended end the upper portion of the rod, said rod having at its lower end a portion thereof for providing a part of a linkage connection, a cup-shaped perforated member hingedly mounted at the center thereof to the lower end of the first member, a link member hingedly connected to the top of the cup-shaped member at a point spaced from the hinged connection point of the lower end of said first member, said link having provided therein an opening and accommodating the lower end of said rod therein, whereby movement of the trigger member through the lnk action of the skimmer assembly causes the cup-shaped member to move from a substantially horizontal flat position to a vertical position, and spring means for urging the device through the trigger member to its position providing horizontal disposition of the cup-shaped member, said mechanical ice fishing skimming assembly having its first member and parts assembled therewith of such a length that the operator may stand and in a standing position remove the ice from an ice hole, thereby preventing the need for kneeling down for such operation.

3,857,788

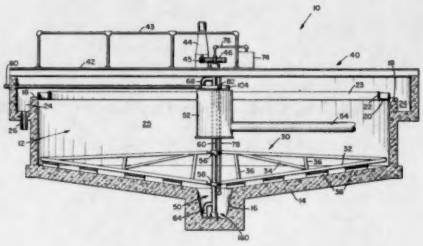
SEDIMENTATION APPARATUS WITH PLURAL SLUDGE DISCHARGE FEATURE

Eugene J. Smith, Valley Cottage, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Apr. 27, 1973, Ser. No. 355,114

Int. Cl. B01d *21/24*

U.S. Cl. 210—520 **8 Claims**



1. In a sedimentation apparatus including a tank having a base and an encircling side wall,

means for supplying a sludge containing influent to said tank, said tank having a sludge hopper in said base,

means for maintaining a predetermined fluid level in said tank,

means in said tank for collecting and transporting sludge settling on said base to a common location in said sludge hopper, said means including a rotary raking structure supported in said tank for rotation about the central vertical axis of said tank,

sludge pick-up means for removing sludge of substantially uniform consistency from said common location,

a rotating spout means connected to said sludge pick-up means for discharging said sludge of substantially uniform consistency to a means for distributing the sludge of substantially uniform consistency from said common location to a first conduit and a second conduit, said distributing means comprising an annular trough fixed to said tank, said first and second conduits being connected to said trough, said trough including flow proportioning structure for selectively, proportionately controlling the quantity of flow of said sludge of substantially uniform consistency to said first and second conduits.

3,857,789

SLUSHING OIL OR RUST INHIBITING COMPOSITIONS

Fred Krupin, New York, N.Y.; John P. G. Beiswanger, Audubon, and Assadullah Nassry, Bethlehem, both of Pa., assignors to GAF Corporation, New York, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,540

Int. Cl. C10m *1/40, 1/32*

U.S. Cl. 252—33.4 **19 Claims**

1. A rust-inhibiting slushing oil composition comprising:

A. 0.5 – 10 percent by weight of a metal salt of a mahogany sulfonate or $C_{8\text{-}30}$ alkyl substituted naphthalene sulfonate, said metal being selected from groups IIA, IIIA and IVA of the Periodic Table;

B. 0.5 – 10 percent by weight of a higher aliphatic fatty carboxylic acid of about 15 to 60 carbon atoms and polymers thereof,

C. 0.5 – 30 percent by weight of a cosolvent for (A) and (B) said solvent being selected from the group consisting of aromatic hydrocarbons, methyl pyrrolidone, tetrahydrofuran, and mono and dialkyl ethers of alkylene glycols and mixtures thereof; and

D. 50 – 98.5 percent by weight of a mineral oil.

3,857,790

IMPROVEMENT IN THE PREPARATION OF OVERBASED MAGNESIUM LUBRICANT ADDITIVES

Peter Anthony Saunders; Michael Frank Fox; Anthony Francis Fagan, and Philip Edward Derbyshire, all of London, England, assignors to Edwin Cooper & Company Limited, London, England

Filed May 26, 1972, Ser. No. 257,424

Claims priority, application Great Britain, May 27, 1971, 17604/71

Int. Cl. C10m 1/40

U.S. Cl. 252—33.4 23 Claims

1. In a process for preparing a magnesium overbased lubricant additive wherein a reaction mixture of an oil soluble detergent or dispersant susceptible to overbasing selected from the group consisting of phosphosulphurized hydrocarbons, metal salts of carboxylic acids, sulphonic acids and metal salts of sulphonic acid, a basic magnesium compound in an amount sufficient to overbase said oil soluble detergent or dispersant, and a reaction promoting amount of a hydroxy-containing compound selected from the group consisting of alcohols and monoethers of glycols is formed in an inert solvent, said reaction mixture is contacted with an acidic gas at a reaction temperature of from about 20°C up to the decomposition temperature of the reaction mixture and the resultant product is heated to remove volatile components; the improvement comprising: incorporating in said reaction mixture a reaction promoting amount, up to about 40 percent by weight based on the weight of the inert solvent, of a salt of an alkanoic acid containing from one to 20 carbon atoms and an aliphatic hydrocarbyl diamine or polyamine containing from two to eight carbon atoms.

3,857,791

LUBRICATING OIL ADDITIVE AND LUBRICATING OIL COMPOSITIONS CONTAINING SAME

Alphonso W. Marcellis, Boonton, and Donald H. Peterson, Parlin, both of N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed May 25, 1972, Ser. No. 257,043

Int. Cl. C10m 1/32

U.S. Cl. 252—51.5 A 7 Claims

1. A lubricating oil additive comprising a mixture of an amido-amine and a hydrocarbylamine, in which

a. the amido-amine/hydrocarbylamine volume ratio varies from about 1/10 to about 10/1,

b. the amido-amine is the condensation product of an alkylenepolyamine containing about 2–6 amino nitrogens and 2–16 carbon atoms and less than the stoichiometric amount of a fatty monocarboxylic acid containing about 14–20 carbon atoms, the mole ratio of said alkylenepolyamine to said fatty monocarboxylic acid being from about 1:1 to about 1:5, and

c. the hydrocarbylamine has a molecular weight from about 450 to about 5000 and is selected from the group consisting of branched chaim aliphatic hydrocarbon monoamines and alkylenepolyamines, and wherein the alkylenepolyamine has the empirical formula

$$R'_a\left[\left(-\overset{|}{N}-CH_2-CH_2-\right)_b-\overset{|}{N}-\right]$$

wherein R′ = *a* branched chain aliphatic hydrocarbon selected from the group consisting of polypropylene and polyisobutylene and having an average molecular weight ranging from about 450 to about 1500,

a = an integer having the value of 1 or 2,

b = an integer having the value of from 1 to about 5.

3,857,792

AN ELECTROSTATIC DEVELOPER MIXTURE WITH A COATED CARRIER

Robert W. Madrid, 160 Jacobs Rd., Macedon, N.Y. 14502, and Robert J. Hagenbach, 235 Westmoreland Dr., Rochester, N.Y. 14620

Division of Ser. No. 27,114, April 9, 1970, , which is a continuation-in-part of Ser. No. 585,793, Oct. 11, 1966, abandoned. This application Apr. 10, 1972, Ser. No. 242,780

Int. Cl. G03g 9/02

U.S. Cl. 252—62.1 3 Claims

1. An electrostatographic developer mixture comprising finely divided toner particles electrostatically clinging to the surface of carrier particles, said carrier particles comprising particulate cores surrounded by a thin outer layer, said thin outer layer comprising from about 1 to about 20 microns in thickness of a blend of a polyphenylene oxide resin and a solid terpolymer of (1) from about 5 to about 94.5%, by weight of an unsaturated silicon free organic compound, (2) from about 94.5 to about 5% by weight of an unsaturated silicon free organic compound different from the compound of (1) and (3) from about 0.5 to about 50%, by weight of a polymerizable organosilicon compound selected from the group consisting of silanes, silanols and siloxanes having from one to three hydrolyzable groups and an organic group attached directly to a silicon atom containing less than 8 carbon atoms and an unsaturated carbon to carbon linkage, the weight ratio of said polyphenylene oxide to said terpolymer being from about 90:10 to about 25:75.

3,857,793

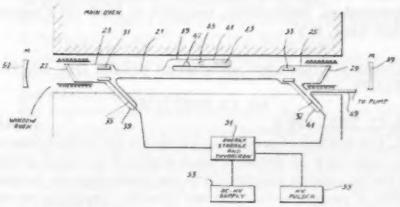
FLUORESCENT ORGANIC COMPOUND LASER

Romano G. Pappalardo, Sudbury, Mass., and Samir A. Ahmed, Manhattan, N.Y., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 1, 1973, Ser. No. 356,259

Int. Cl. H01s 3/22

U.S. Cl. 252—301.3 R 2 Claims



1. In a discharge-excited laser, an active medium in the form of vaporized p-terphenyl, the partial pressure of said p-terphenyl being, at operating temperature, about 0.1 torr to about 1 torr, and a small quantity of a noble or inert gas selected from the group consisting of argon, helium, neon, xenon and krypton.

3,857,794

OXYGEN CONTROL BY INJECTION OF A REDUCING GAS IN A CATALYST REGENERATOR

Edward J. Carey, El Paso, Tex., assignor to Chevron Research Company, San Francisco, Calif.

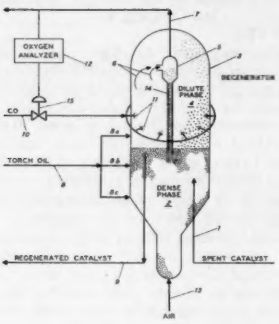
Continuation of Ser. No. 803,276, Feb. 28, 1969, abandoned. This application Sept. 22, 1971, Ser. No. 182,828

Int. Cl. B01j 11/04

U.S. Cl. 252—419 4 Claims

1. A cracking catalyst regeneration process for allowing enriched oxygen content and high temperatures of at least about 1,175° F. to exist in a dense phase bed of catalyst particles in a fluidized bed, dense phase-dilute phase catalytic cracker regenerator, and for reducing uncontrolled after-

burning in the regenerator, which comprises injecting a reducing gas selected from the group consisting of hydrogen and carbon monoxide through at least three nozzles located within the first 20 feet of the length of the regenerator above the top of the dense phase bed of catalyst particles being regenerated,



at a point wherein the overall density is about 4 pounds per cubic foot, to reduce the oxygen content to below about 1.5 volume percent and removing the regenerated catalyst particles downwardly from the dense phase bed in the bottom of the regenerator and then passing the catalyst particles to a catalytic cracking reaction zone.

3,857,795

PREPARATION OF $TiCl_3$ COMPONENT OF OLEFIN POLYMERIZATION CATALYST

Herman Th. Van Der Bend, and Willem Sjardijn, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,191

Claims priority, application Great Britain, Dec. 20, 1971, 59013/71

Int. Cl. B01j *11/84*

U.S. Cl. 252—429 A **4 Claims**

1. The method of producing a titanium trichloride composition consisting of dense, smooth-surfaced particles adapted for use as catalyst component in the stereroregular polymerization of propylene to a polymer powder containing no more than 2% of fines of less than 53 micron diameter and having a freely settled bulk density of at least about 0.32 g/ml which consists essentially of:

1. gradually, over a period of at least one hour, adding a solution of titanium tetrachloride in alkane diluent to an agitated solution of aluminum trialkyl in alkane diluent at a mole ratio of titanium tetrachloride to aluminum trialkyl in the range from 3:0.9 to 3:1.5, at a mixing temperature T within the range from below −90° to −125° C, wherein the freezing point of said diluent is below (T − 15)° C, the first 10 percent of said titanium tetrachloride being added gradually at substantially uniform rate over a period of at least 25 minutes;
2. after completion of said addition gradually raising the temperature of the mixture to at least about −30° C at a rate less than 1° C per minute and maintaining it below 80° C until the reduction of $TiCl_4$ to $TiCl_3$ is substantially complete;
3. converting said $TiCl_3$ to the violet form by raising the temperature of the $TiCl_3$-containing component slurried in alkane diluent, to a temperature in the range between 100° and 250° C; and
4. cooling the resulting slurry to at least below 80° C.

3,857,796

OXIDATION CATALYST

Shigeo Takenaka; Hitoshi Shimizu, and Masanobu Ogawa, all of Takasaki, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1973, Ser. No. 336,058

Claims priority, application Japan, Mar. 9, 1972, 47-23603

Int. Cl. B01f *11/06*

U.S. Cl. 252—467 **2 Claims**

1. A catalyst represented by the empirical formula,

$$Mo_aV_bT_cA_dO_e$$

wherein, Mo, V and O represent molybdenum, vanadium and oxygen, respectively, T represents tungsten or antimony, A represents an alkali metal, and *a*, *b*, *c*, *d* and *e* represent number of atoms of Mo, V, T, A and O, respectively, and when *a* is 12, *b* is 0.5 to 6, *c* is 0 to 6, *d* is 0.01 to 1.5 and *e* is a number naturally determined by the valence requirements of the other elements present.

3,857,797

GREASE COMPOSITION

Richard N. Nipe, Munster, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed Feb. 11, 1974, Ser. No. 441,015

Int. Cl. C10m *5/22, 7/36*

U.S. Cl. 252—47.5 **4 Claims**

1. The grease composition comprising a lubricating fluid and a thickening amount of from 3 to about 50 weight percent of a finely-divided solid, thermally stable, essentially linear aromatic polyamide, insoluble in said fluid, selected from the group consisting of (a) the polyamide derived from substantially equimolar proportions of 4,4′-diaminodiphenyl sulfone and terephthaloyl dichloride and (b) the polyamide derived from substantially equimolar proportions of 4,4′-diaminodiphenyl sulfone and a phthaloyl acid chloride mixture consisting of about 75 mol percent terephthaloyl dichloride and about 25 mol percent isophthaloyl dichloride.

3,857,798

CONDUCTIVE INK COMPOSITION CONTAINING PD AND PB METAL POWDERS

David Thomas Wall, Shirley, and Neil Albert Burr, Quinton, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 27, 1972, Ser. No. 275,884

Claims priority, application Great Britain, July 27, 1971, 35315/71

Int. Cl. H01b *1/02, 1/08*

U.S. Cl. 252—514 **7 Claims**

1. An ink for use in the manufacture of a thick film circuit, said ink comprising palladium powder, lead powder, the ratio of the weight of the palladium powder to the weight of the lead powder being in the range of 3:1 to 3:2 an inorganic bonding material and a binder liquid.

3,857,799

PROCESS FOR THE REGENERATION OF PLASTICS

Seiichi Ooba, Asaka, and Shinichi Hirayama, Fukuyama, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 25, 1972, Ser. No. 229,501

Claims priority, application Japan, Feb. 25, 1971, 46-9483

Int. Cl. C08f *47/24;* **C08g** *53/22;* **C08b** *29/40*

U.S. Cl. 260—2.3 **15 Claims**

1. A process for regenerating waste plastic material comprising:

A. mixing said waste plastic material with (1) a modified polyester prepared by heating polyethylene terephthalate in the presence of a glycol to substitute said glycol for 30 to 100 percent of the repeating ethylene glycol units of said polyethylene terephthalate, said glycol being selected from the group consisting of polymethylene gly-

cols, polyethylene glycols, alkylene glycols and glycols represented by the formula $HOCH_2—X—CH_2OH$ wherein X is an organic group having at least one aromatic ring, with the proviso that said glycol is not ethylene glycol, and (2) at least one member selected from the group consisting of a vinyl acetate homopolymer, an ethylene-vinyl acetate copolymer and a tacky polyolefin selected from the group consisting of a polyolefin having a low polymerization degree and atactic polypropylene, the amount of components (1) and (2), in combination, being effective to adhere said waste plastic material in a moldable form; and

B. molding the resulting mixture into the desired shape; said plastic being selected from the group consisting of thermoplastic and thermosetting resins.

3,857,800

FLEXIBLE POLYURETHANE FOAMS PREPARED FROM A MIXTURE OF POLYETHER POLYOLS

John Fishbein, Marlow; Raymond William Henry Bell, Great Kings Hill; Anthony James Clarke, Chinnor, and Peter Merriman, Stratford-on-Avon, all of England, assignors to Dunlap Holdings Limited, London, England

Continuation of Ser. No. 148,170, May 28, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,221

Claims priority, application Great Britain, June 19, 1970, 30000/70

Int. Cl. C08g *22/46*

U.S. Cl. 260—2.5 AP **15 Claims**

1. A flexible polyurethane foam having an open-cell structure in which adjacent cells communicate with one another to a substantial extent, said foam having been prepared by the process which comprises reacting an organic polyisocyanate and two different polyols of which one is (a) an ethylene oxide tipped polyol prepared by reacting propylene oxide or a mixture of propylene oxide and ethylene oxide with a polyhydric alcohol having three hydroxyl groups and then reacting the resulting product with ethylene oxide until an ethylene oxide tipped polyol having a molecular weight of 3000 to 6000 and in which from 20 to 70% of the total terminal hydroxyl groups are primary hydroxyl groups is obtained, and the other polyol (b) is an anti-shrinking agent for the foam and is a subsidiary polyol, said subsidiary polyol containing at least 40% by weight oxyethylene groups with at least some of the oxyethylene groups in non-terminal positions, said subsidiary polyol being a polyethylene ether glycol or a poly(oxyethylene) poly(oxypropylene) polyol having a poly(oxypropylene) molecular weight of 500 to 2000, said polyol (b) being not more than 50% by weight of the total polyol, said reaction mixture containing a blowing agent.

3,857,801

METHOD FOR OBTAINING A CONTROLLED INCREASE OF THE DENSITY OF POROUS POLYMERS

Finn Ragnar Kulas, and Terje Ekeland, both of Porsgrunn, Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Mar. 23, 1973, Ser. No. 344,176

Claims priority, application Norway, Mar. 23, 1972, 993/72

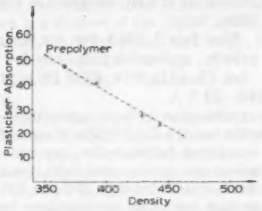
Int. Cl. C08f *47/08*

U.S. Cl. 260—2.5 B **2 Claims**

1. In a method for increasing the density of porous polymers in a controlled manner by adding a vinyl chloride monomer to a previously prepared porous polyvinyl chloride and subsequently polymerizing the added monomer, the improvement wherein the polymerization is effected in an aqueous suspension, whereby the amount of vinyl chloride monomer is limited up to that which the initial porous polymer can absorb, and the monomer/polymer ratio is further calculated on the basis of the desired increase of the density of the polymer according to the following equation:

$$P_p = P_p^\circ + K\ (m_{vc}/3m_{pvc})$$

wherein P_p is the desired density of the polymer, P_p° relates to the density of the prepolymer, m_{vc} relates to the weight of the



monomer, m_{pvc} relates to the weight of the prepolymer, and K_3 is a constant.

3,857,802

BARIUM CARBONATE AS A MODIFIER FOR CERTAIN NON-RIGID POLYMETHANE FOAMS

William A. Larkin, Morristown; Robert C. Ringwood, Jr., Sewaren, and Kenneth Treadwell, Rahway, all of N.J., assignors to M & T Chemicals, Inc., Greenwich, Conn.

Filed Oct. 10, 1973, Ser. No. 405,072

Int. Cl. C08g *22/44, 51/56, 41/04*

U.S. Cl. 260—2.5 BE **2 Claims**

1. In an improved flame-retardant flexible or semiflexible foam comprising the reaction production of

a. 100 parts by weight of a polyol selected from the group consisting of primary and secondary hydroxyterminated polyalkylene ethers exhibiting a molecular weight between 1,000 and 10,000;

b. an organic di- or triisocyanate in an amount between 0.70 and 1.35 moles per total mole of active hydrogen present, as determined by the Zerewitinoff method;

c. between 1.5 and 5 parts of water or other blowing agent;

d. between 0.1 and 0.9 part of a gel catalyst;

e. a flame retardant consisting essentially of antimony trioxide and between 2 and 100 parts of a finely divided halogen-containing polymer;

the improvement which comprises the presence of barium carbonate in an amount between 2 and 50%, based on the weight of said antimony trioxide, the combined weight of antimony trioxide and barium carbonate constituting between 2 and 20%, based on the weight of said polyol.

3,857,803

LABELING ADHESIVE

Richard Stewart Shenfeld, Hoffman Estates, and Orville E. Brown, Elk Grove Village, both of Ill., assignors to Borden, Inc., Columbus, Ohio

Filed June 5, 1973, Ser. No. 367,197

Int. Cl. C08b *25/02*

U.S. Cl. 260—17.4 ST **6 Claims**

1. An adhesive for labeling glass bottles capable of forming a paper-to-glass bond durable to submersion in ice water, said adhesive consisting essentially of at least 40 percent by weight water; from about 10 percent to about 40 percent unconverted starch; from about 5 percent to about 20 percent nitrogeneous substance selected from the group consisting of urea, dicyandiamide and mixtures thereof; and an ammoniated hydrolysis product of a styrene/maleic anhydride copolymer devoid of amide groups in amount corresponding to from about 0.6 to about 33 parts by weight of said copolymer for each 100 parts of combined weight of starch and nitrogeneous substance, with sufficient ammonia to effect a pH in the adhesive in the range of about 7.5 to about 9.2.

3,857,804
THERMOPLASTIC FILM FOR CONTROLLING PLANT GROWTH

Flaviano Glatti, Mestre; Manlio Guariento, Mantova, and Ugo Cerruti, Milan, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed July 7, 1969, Ser. No. 839,652
Claims priority, application Italy, July 5, 1968, 18604/68
Int. Cl. A01g *9/14*; **C08f** *29/18*, *45/56*
U.S. Cl. 260—23 X A **4 Claims**

1. The combination with an agricultural growth medium exposed to the sun of a flexible film of synthetic thermoplastic material interposed between the sun and the agricultural growth medium and having total light transmittance to sunlight with a wavelength between 300 and 700 mμ of less than 40% and average total light transmittance for sunlight with a wavelength greater than 900 mμ of at least 60%, the total transmittance of the film to sunlight between 900 and 1500 mμ being on the average greater than 60%, the flexible film having a thickness of 0.01 to 0.5 mm and light transmittance characteristics for sunlight corresponding to the following table:

Wavelength (m)	Total Transmittance (%)
300 to 500	0 to 10
500 to 750	0 to 35
750 to 900	0 to 90
900 to 1500	60 to 90,

said film being formed with an opening through which a plant is grown and surrounding said plant for restricting growth there-around.

3,857,805
HYDROCARBON WAX COMPOSITION

William A. Prickril, Lakewood, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 301,580, Oct. 27, 1972, abandoned. This application Mar. 25, 1974, Ser. No. 454,208
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 B **10 Claims**

1. A composition comprising a major proportion of a hydrocarbon wax containing about 10–40% by weight of oil and a minor proportion of an ethylene/propylene/non-conjugated polyene terpolymer having a combined ethylene content of about 30–85% by weight and an iodine number of about 5–15.

3,857,806
VINYL ACETATE-ALPHA OLEFIN COATING COMPOSITIONS

Philip K. Isaacs, Jerusalem, Israel, and Alexander C. Paton, Bedford, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 838,022, June 19, 1969, abandoned, which is a continuation of Ser. No. 560,841, June 27, 1966, abandoned. This application Mar. 15, 1971, Ser. No. 124,539
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 R **5 Claims**

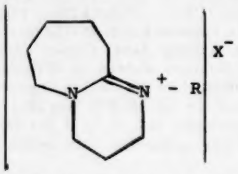
1. A latex coating composition consisting essentially of water and dispersed therein pigment and a film-forming amount of a copolymeric component, said copolymeric component consisting of from about 70 to 99 weight percent vinyl acetate copolymerized with from about 1 to 30 weight percent C_7 to C_{20} straight chain alpha olefin, said copolymer having an intrinsic viscosity in acetone at 30°C. of at least 0.2 deciliters per gram.

3,857,807
FLUOROELASTOMER COMPOSITION

Yutaka Kometani; Shun Koizumi, both of Osaka; Takeshi Suzuki, Kyoto; Yasuyoshi Furukawa, Osaka; Masayasu Tomoda, Osaka, and Kiyoichi Kondo, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Nov. 6, 1972, Ser. No. 303,769
Claims priority, application Japan, Nov. 11, 1971, 46-90488; July 25, 1972, 47-74849
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 F **15 Claims**

1. A fluoroelastomer composition consisting essentially of (a) a fluoroelastomer, (b) 2 to 30 parts of at least one member selected from the group consisting of a bivalent metal oxide, a bivalent metal hydroxide and a mixture of a bivalent metal oxide or a metal hydroxide with a metal salt of a weak acid, (c) 0.5 to 5 parts of an aromatic polyhydroxy compound, (d) 0.2 to 10 parts of a quaternary ammonium compound having the general formula:



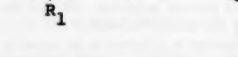
wherein R is an alkyl group having 1 to 24 carbon atoms or an aralkyl group having 7 to 20 carbon atoms, and X^- is an anion selected from the group consisting of a halide ion, hydroxylate ion, alkoxylate ion, carboxylate ion, phenoxide ion, sulfonate ion, sulfate ion, sulfite ion and carbonate ion, and (e) 0.1 to 10 parts of water or 0.5 to 30 parts of a metal compound which produces water by reaction with hydrogen fluoride, said parts of (b), (c), (d) and (e) being parts by weight per 100 parts of (a).

3,857,808
PROCESS FOR PREPARING HIGH SOLIDS CONTENT POLYMER LACQUER DISPERSIONS

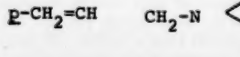
William Andrew Crozier, and Dieter Heinrich Klein, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

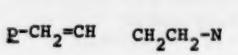
Filed Apr. 24, 1972, Ser. No. 246,874
Int. Cl. C08f *45/28*, *47/20*
U.S. Cl. 260—33.6 UA **3 Claims**

1. A process for preparing a dispersion containing from about 75 to 80 percent by weight of individual particles of a normally crystalline vinylidene chloride polymer in a nonpolar organic liquid hydrocarbon having a boiling point between about 30°C. to 300°C. which process comprises polymerizing the monomeric constituents of said polymer in said organic liquid in the presence of from about 0.1 to 3 percent by polymer weight of a preformed dispersion stabilizer which is the product of the reaction of (A) a poly-12-hydroxy stearic acid having a molecular weight up to about 3,000, and (B) a compound selected from the group consisting of compounds of the formula



; and





where
R_1 is hydrogen or CH_3,
R_2 is hydrogen or lower alkyl, and
R_3 is hydrogen or lower alkyl;
wherein the mass ratio of (A) to (B) is from about 90:10 to about 80:20.

3,857,809
POLYURETHANE-UREAS BASED ON CIS-TRANS-1,4-DIAMINOCYCLOHEXANE

Harald Oertel, Odenthal-Gloebusch; Bruno Zorn, Cologne; Wilhelm Thoma, Bergisch-Neukirchen, and Klaus Noll, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen

Filed Apr. 23, 1973, Ser. No. 353,279
Claims priority, application Germany, May 4, 1972, 2221798
Int. Cl. C08g *51/28, 22/04*
U.S. Cl. 260—33.8 UB **10 Claims**

1. A polyurethane polyurea prepared by a process which comprises, reacting in an inert organic solvent a
a. chain extender comprising at least 80 mol % 1,4-diamino cyclohexane with a cis/transisomer ratio of from 10/90 to 60/40, with
b. an isocyanato terminated prepolymer prepared by a process which comprises reacting
i. substantially linear polyhydroxyl compounds with molecular weights of from 500 to 5000, with
ii. aliphatic or cycloaliphatic diisocyanates, the molar ratio of hydroxyl groups to isocyanate groups being between about 1 : 1.5 and 1 : 5,
and evaporating the solvent.

3,857,810
PROCESS FOR THE TRANSFORMATION OF A POLYMER DISPERSION TO A HOMOGENEOUS SOLID MASS

Alan Stuart Baker, George Green, and Julian Alfred Waters, Spencers Wood, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 62,209, Aug. 7, 1970, abandoned. This application Feb. 13, 1973, Ser. No. 332,113
Claims priority, application Great Britain, Aug. 14, 1969, 40643/69
Int. Cl. C08f *45/28, 47/20*
U.S. Cl. 260—34.2 **9 Claims**

1. A process for converting, into a homogeneous solid mass, a concentrated, fluid dispersion of self-stable, substantially spherical aggregates of an amphipathic block or graft copolymer in a hemi-solvent, the amphipathic copolymer comprising at least two polymeric components of molecular weight at least 500 which differ significantly from each other in their solublity characteristics, the hemi-solvent being a liquid or mixture of liquids which is a good solvent for one of the said polymeric components and a non-solvent for another of the said components and the weight ratio in the amphipathic copolymer of the components insoluble in the hemi-solvent to the components soluble in the hemi-solvent being not less than 50:50, wherein the concentration of the amphipathic copolymer in the hemi-solvent is not less than 20% by weight,
said process comprising heating the concentrated dispersion without significant change in the concentration of the copolymer in the hemi-solvent to a temperature above the environmental glass transition temperature of the insoluble components of the copolymer and subsequently cooling the resulting fluid composition to a temperature below the said transition temperature.

3,857,811
FRICTION PARTICLE FOR BRAKE LINING

Frank S. Grazen; Melvin L. Buike, and Frank M. Bryzinsky, all of North Tonawanda, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 188,598, Oct. 12, 1971, Pat. No. 3,781,241, which is a division of Ser. No. 872,753, Oct. 30, 1969, Pat. No. 3,658,751. This application Dec. 27, 1972, Ser. No. 318,795
Int. Cl. C08g *37/18, 51/10*
U.S. Cl. 260—38 **9 Claims**

1. A friction particle comprising the non-catalyzed reaction product of the reaction at about 225 to about 400 degrees F. of a nonhydroxyalkylated, non-alkylated hydroxy aromatic hydrocarbon-aldehyde resole containing substantially no etherified aromatic hydroxyl groups with a mixture of a hydroxyalkylated hydroxy aromatic hydrocarbon-aldehyde novolac with at least one member of the group consisting of a hydroxyalkylated hydroxy aromatic hydrocarbon-aldehyde resole and an alkylated hydroxy aromatic hydrocarbon aldehyde resole until the resulting product is substantially insoluble in acetone, infusible, and does not soften slightly under mechanical force at a temperature below 400 degrees F. and has substantially no cohesive or bonding strength, wherein said non-hydroxyalkylated resole comprises about 60 to about 95 percent of the weight of the resin components; wherein the hydroxyalkylated resole contains less than about 0.5 percent of the aromatic hydroxyl originally present in the hydroxy aromatic hydrocarbon aldehyde condensate; and wherein the alkylated groups are substituted on the aromatic ring and are selected from the group consisting of:
(a) alkyl groups of 1 to 60 carbon atoms,
(b) cycloalkyl groups of 5 to 12 carbon atoms,
(c) alkyl, aryl and cycloalkyl ketonic groups wherein the hydrocarbon portion is as defined in (a) and (b),
(d) alkyl, aryl and cycloalkyl carboxylic groups wherein the hydrocarbon portion is as defined in (a) and (b),
(e) aryl groups of 6 to 24 carbon atoms, and
(f) aryl substituted alkyl wherein the aryl is phenyl, lower alkyl-substituted phenyl or hydroxy substituted phenyl.

3,857,812
UNSATURATED POLYESTER COMPOSITIONS AND THERMOSET ARTICLES PREPARED THEREFROM

Robert M. Nowak, and Thomas O. Ginter, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 17,947, March 9, 1970, Pat. No. 3,674,893, which is a continuation-in-part of Ser. No. 812,326, April 1, 1969, abandoned. This application June 2, 1972, Ser. No. 259,285
Int. Cl. C08d *9/08;* **C08f** *43/08*
U.S. Cl. 260—40 R **30 Claims**

1. A stable, thermosettable compositiion suitable for preparing impact resistant reinforced plastic articles which comprises a mixture of about 85 to 95 weight percent of a polymerizable resin wherein said resin comprises about 25 to 70 weight percent of an unsaturated polyester of a dicarboxylic acid and a polyol and about 75 to 30 weight percent of a copolymerizable vinyl monomer, and about 15 to 5 weight percent of a polydiene rubber selected from the group consisting of (a) a homopolymer of a conjugated diene monomer or a copolymer of two or more conjugated diene monomers having an inherent viscosity of about 0.75 to 1.2 deciliters/gm and (b) copolymers of 30 to 80 weight percent of a conjugated diene and 70 to 20 weight percent of at least one other copolymerizable monomer selected from the group consisting of unsaturated nitrile monomers and alkenyl aromatic monomers wherein the copolymer has an inherent viscosity of about 0.3 to 1.2 deciliters/gm.

3,857,813
INCORPORATION OF REINFORCING FIBERS INTO OLEFIN POLYMERS

S. Douglas Stain, Jr.; Gordon Y. T. Liu, both of Baton Rouge, and Lloyd B. Hutchinson, Denham Springs, all of La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 196,193, Nov. 5, 1971, abandoned. This application Sept. 21, 1973, Ser. No. 399,780

Int. Cl. C08f *45/10*

U.S. Cl. 260—42.18 **7 Claims**

1. A method for incorporating a reinforcing fiber into olefin polymer comprising the steps of blending a reinforcing amount of reinforcing fibers with an extrudable, free flowing olefin polymer powder characterized by a bulk density in the range from about 20 to about 35 pounds per cubic foot and particles having particle sizes predominantly in the range from about 50 to about 800 microns, roughened surfaces and porosity sufficient to provide an average free volume within individual particles in the range from about 20 to about 50 volume per cent based on total volume of particles of the powder.

3,857,814
BRANCHED AROMATIC POLYESTERS AND CROSS-LINKED DERIVATIVES THEREOF

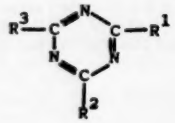
James Economy, Eggertsville; Steve G. Cottis, Amherst, and Bernard E. Nowak, Lancaster, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 96,234, Dec. 8, 1970,. This application Nov. 6, 1973, Ser. No. 413,474The portion of the term of this patent subsequent to Nov. 13, 1990, has been disclaimed.

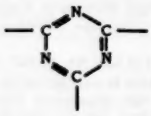
Int. Cl. C08g *17/02, 17/08*

U.S. Cl. 260—47 CP **44 Claims**

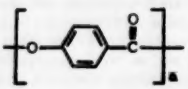
1. A branched aromatic polyester of Formula I

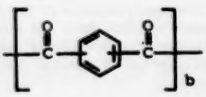
(I) 

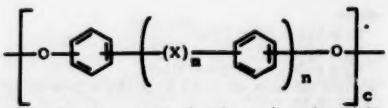
wherein



is a cyanuryl nucleus and wherein R^1, R^2 and R^3 each consist essentially of a plurality of moieties selected from the group having the Formulas II, III and IV

(II) 

(III) 

(IV) 

a, *b* and *c* being integers representing the total number of the respective moieties in each of R^1, R^2 and R^3;

wherein:

X is -O-, or ;

n is 0 or 1, and when *n* is 1, *m* is 0 or 1;

the carbonyl groups of the moiety of Formula III are meta or para to each other;

the oxy groups of the moiety of Formula IV are meta or para to each other;

wherein:

the oxy groups of the moieties of Formulas II and IV are linked to a carbonyl group of a moiety of Formulas II or III or to a carbon atom of the cyanuryl nucleus;

the carbonyl groups of the moieties of Formulas II and III are linked to an oxy group of a moiety of Formulas II or IV;

the carbon atoms of the cyanuryl nucleus are linked to an oxy group of a moiety of Formulas II or IV;

and wherein:

a is an integer from 0 to about 40;

b is an integer from 0 to about 20;

c is an integer from 0 to about 20;

$a + b + c$ is an integer from 2 to about 40;

the average value of *a*, *b* and *c* for R^1, R^2 and R^3 is from 2 to about 40;

when *a* is 0, *b* is an integer from 1 to about 20 and *c* is an integer from 1 to about 20;

when *b* is 0, *a* is an integer from 1 to about 40 and *c* is 0 or 1;

when *b* and *c* are each O, *a* is an integer from 2 to about 40.

3,857,815
POLYGLYCOL-MODIFIED PHENOLIC RESINS

Harry A. Smith, and Erwin H. Kobel, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

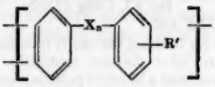
Continuation-in-part of Ser. No. 151,545, June 9, 1971, abandoned. This application July 5, 1973, Ser. No. 376,755The portion of the term of this patent subsequent to Apr. 3, 1990, has been disclaimed.

Int. Cl. C08g *5/18*

U.S. Cl. 260—51.5 **11 Claims**

1. A process for making an improved phenolic aldehyde resin which comprises reacting by contacting at about 50°C. to the boiling point of the reaction mixture a resole resin with about 0.5–40 weight percent based on the weight of resole of polyalkylene glycol having an average molecular weight of about 400–10,000, wherein said polyalkylene glycol is essentially a polypropylene glycol, a polybutylene glycol, or a mixture thereof and the resole is the neutral or basic catalyst-initiated reaction product of about 0.5–2.2 moles of formaldehyde with a mole of a phenol and wherein the polyglycol-modified resole is reacted at about 50°C. to the boiling point of the reaction mixture with about 0.05–0.5 gram mole per 100 grams of resole of at least one aromatic amine of the group consisting of aniline, ar-(lower alkyl)aniline, lower alkoxyaniline, and a difunctional aromatic amine of the formula

wherein A represents a benzene ring, a napthalene nucleus, or a dicyclic moiety of the formula



wherein X is oxygen, lower alkylidene, S, SO_2, or NH, *n* is zero or one, R is OH or NH_2, and R′ is H, lower alkyl, or lower alkoxy.

3,857,816

METHOD OF MANUFACTURING POLYMER GRAFT-POLYMERIZED ONTO CRYSTALLINE INORGANIC SALT

Tadashi Yamaguchi, No. 9-29, Hachiman 3-chome, Sendai-shi, Miyagi-ken; Hiroshi Hoshi, No. 426, Saginuma-cho 1-chome, Narashino-shi, Chiba-ken; Michio Hirakawa, No. 22-9, Mama 5-chome, Ichikawa-shi, Chiba-ken, and Isao Watanabe, No. 1724, Yatsu 8-chome, Narashino-shi, Chiba-ken, all of Japan

Filed Aug. 2, 1972, Ser. No. 277,343

Claims priority, application Japan, Aug. 3, 1971, 46-57949

Int. Cl. C08f *3/00, 15/04, 15/08*

U.S. Cl. 260—63 R **9 Claims**

1. A method of preparing a polymer graft-polymerized onto a crystalline inorganic salt, which comprises the steps of :

mixing (a) an aqueous suspension of particles of crystalline inorganic salt selected from the group consisting of calcium sulfite and calcium carbonate, (b) a substance selected from the group consisting of sulfur dioxide and carbon dioxide and capable of reacting with said crystalline inorganic salt to form active radical sites on said salt, and (c) at least one monomer capable of radical polymerization and having an e value of from −0.8 to +0.8, to form a reaction mixture of (a), (b) and (c);

maintaining said mixture under polymerizing conditions effective to polymerize said monomer (c) onto the active sites on said salt to form solid particles of a polymer of (c) grafted onto a nucleus of said crystalline inorganic salt, and then recovering the polymerization product particles from the reaction system.

3,857,817

THERMOSETTING COATING COMPOSITIONS

Bruce Collins Henshaw, Mount Waverley, and Bruce Leary, Frankston, both of Australia, assignors to Dulux Australia Ltd., Melbourne, Victoria, Australia

Filed May 15, 1973, Ser. No. 360,453

Claims priority, application Australia, May 24, 1972, 9068/72

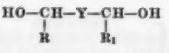
Int. Cl. C08g *37/30*

U.S. Cl. 260—67.6 R **6 Claims**

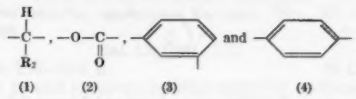
1. A liquid coating composition the film-forming constituents of which consist essentially of a blend of

a. methylol melamine containing 4 – 6 methylol groups per molecule which groups are fully etherified with methanol or ethanol, and

b. an ester diol of the structure



wherein Y is a molecular entity of chainlike structure the links of which chain are selected from the moieties



and R, R_1 and R_2 are selected from H, CH_3 and C_2H_5 provided also that the chain shall contain at least two links of the structure (2) and ester diol shall have a maximum molecular weight of 600 the components (a) and (b) being blended in a molar ratio of from 1:1.67 to 1:3.

3,857,818

BLOCKED POLYURETHANE POWDER COATING COMPOSITIONS

Gerald L. Frizelle, Gladstone, Mo., assignor to Cook Paint and Varnish Company, Kansas City, Mo.

Filed Sept. 18, 1972, Ser. No. 289,968

Int. Cl. C08g *22/32;* **C09d** *3/72;* **B05d** *5/00*

U.S. Cl. 260—77.5 TB **3 Claims**

1. A solid, heat-curable powder coating composition consisting essentially of a solid powder mixture of a solid ketoxime-blocked organic polyisocyanate having no free isocyanate groups which becomes unblocked at the curing temperature and a solid hydroxy functioanl acrylic or polyester resin, the ratio of the blocked isocyanate to hydroxy resin being such as to give an NCO/OH ratio of 0.6/1.0 to 1.5/1.0 and said solid hydroxy functional resin being selected from the group consisting of (A) solid hydroxy functional acrylic copolymers of (1) at least one monomer selected from the group consisting of styrene, α-methyl styrene, alkyl methacrylates and alkyl acrylates and (2) a hydroxy alkyl acrylate or methacrylate; and (B) solid hydroxy functional polyesters of polyhydric alcohols and dibasic acids.

3,857,819

POLYUREA FIBERS BASED ON POLY(4,4′-METHYLENEDICYCLOHEXYLENE)UREA

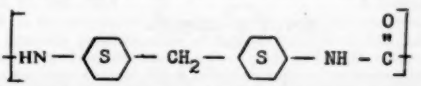
Ronald Dean Mathis, Taylors, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 5, 1973, Ser. No. 338,100

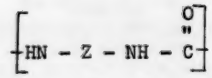
Int. Cl. C08g *22/02*

U.S. Cl. 260—77.5 CH **3 Claims**

1. A synthetic fiber of a polyurea wherein at least about 97 mole percent of its recurring units have the structural formula

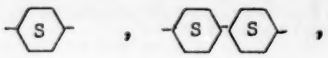


and from 0 to 3 mole percent of its recurring units have the structural formula

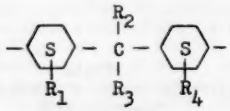


wherein

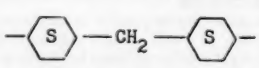
represents a 1,4-cyclohexylene group and Z represents a divalent organic group selected from alkylene of three to six carbon atoms,



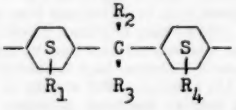
and



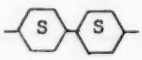
where R_1, R_2, R_3 and R_4 each represent hydrogen or methyl groups with the proviso that at least one of R_1–R_4 is methyl; and wherein at least about 69 percent of the



groups, at least about 69 percent of the

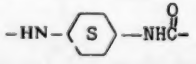


groups, and at least about 69 percent of the



groups, have both their cyclohexylene moieties in the trans configuration and at least about 69 percent of the

groups in the formula



are in the trans configuration; said fiber having an inital modulus of at least about 70 gpd. and a sonic velocity of af least 3.0 km./sec.

3,857,820

SOLUTION FOR FORMING THERMALLY RESISTANT POLYMERS

Makoto Kojima; Yuzuru Noda; Shiro Mazaki, and Yashutada Katashiba, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 13, 1973, Ser. No. 397,209
Claims priority, application Japan, Sept. 14, 1972, 92564
Int. Cl. C08g *22/00*
U.S. Cl. 260—77.5 AM **12 Claims**

1. A solution for forming thermally resistant polymers comprising a mixture of a polymer terminally substituted with glycine derivatives and a blocked polyisocyanate in an amount approximately stoichiometrically equivalent to said prepolymer in an inert solvent, said prepolymer comprising the reaction product of two equivalents of a diglycine derivative having the general formula

$$[R_1OOC(R_2)_2CHN]_2R_3$$

wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom or a lower alkyl radical and R_3 represents a divalent aromatic radical, a divalent aliphatic radical or a divalent alicyclic radical, with a diisocyanate or a blocked diisocyanate, said diisocyanate or blocked diisocyanate containing an imide group and, optionally an imide-forming group in the molecular chain of the molecule, and comprising the reaction product of at least one of 1,2,3,4-butanetetracarboxylic acid and derivatives thereof selected from the group consisting of 1,2,3,4-butanetetracarboxylic acid mono anhydride, 1,2,3,4-butanetetracarboxylic acid diester and 1,2,3,4-butanetetracarboxylic acid diamide, with an excess molar amount of a diisocyanate monomer or a blocked monomer thereof.

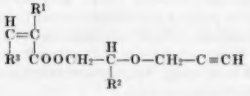
3,857,821

ACETYLENE GROUP-CONTAINING POLYMERS

Ernst Becker, 18 Fichtestrasse, 6700 Ludwigshafen; Herbert Naarmann, 15 Haardtblick, 6719 Wattenheim; Kurt Schneider, Auf dem Koeppel, 6702 Bad Duerkheim 1, and Hellmuth Kessler, 17 An der Tuchbleiche, 6712 Bobenheim-Roxheim 2, all of Germany

Filed Sept. 19, 1973, Ser. No. 398,572
Int. Cl. C08f *3/64, 3/66, 9/00*
U.S. Cl. 260—78.4 E **2 Claims**

1. A process for the manufacture of acetylene group-containing polymers, wherein acetylene derivatives of the formula:



in which R^1 and R^2 are hydrogen or methyl and R^3 is hydrogen or carboxyl, are polymerized together with from 0 to 99% by weight of other olefinically unsaturated monomers by free-radical polymerization.

3,857,822

LIGHT-SENSITIVE COPOLYMERS, A PROCESS FOR THEIR MANUFACTURE AND COPYING COMPOSITIONS CONTAINING THEM

Werner Frass, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrick, Germany

Filed Jan. 26, 1973, Ser. No. 327,100
Claims priority, application Germany, Jan. 27, 1972, 2203732
Int. Cl. C08f *27/08*
U.S. Cl. 260—78.5 T **4 Claims**

1. A process for the manufacture of a copolymer which comprises reacting a copolymer containing from 20 to 55

mole per cent of maleic anhydride units and from 45 to 80 mole per cent of units of the formula

$$-CH_2-CXZ-$$

wherein X is selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl or alkoxy group containing from one to three carbon atoms, an aryl group or an acyloxy group, and Z is selected from the group consisting of a hydrogen atom, a halogen atom or an alkyl group containing one or two carbon atoms, with from 70 to 300 mole per cent of allylamine, relative to maleic anhydride units of the said copolymer, in a lower aliphatic carboxylic acid as a solvent.

3,857,823

PREPARATION OF SULFOXIDE SORBENTS

Guenter R. Ackermann, Newton Square, Pa., assignor to Rohm and Hass Company, Philadelphia, Pa.

Filed Feb. 11, 1972, Ser. No. 225,643
Int. Cl. C08f 27/06
U.S. Cl. 260—79.3 R **6 Claims**

1. A water-insoluble macroreticular polymer of an aromatic mono-vinyl compound crosslinked by copolymerization with an aromatic polyvinyl compound, said polymer containing as substituents on the aromatic nucleii, sulfinyl groups of the formula —SOX wherein X is an aryl group.

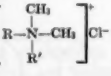
3,857,824

PROCESS FOR THE PREPARATION OF BEAD POLYMERS USEFUL IN GEL PERMEATION CHROMATOGRAPHY

Bobby L. Atkins, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 5, 1972, Ser. No. 269,233
Int. Cl. C08f 1/11, 15/02
U.S. Cl. 260—80.3 N **9 Claims**

1. In the process of making heteroporous polymers in bead form useful in gel permeation chromatography wherein a vinyl monomer of acrylamide or methacrylamide is copolymerized with an n alkylidene bisacrylamide as a crosslinking monomer, both monomers being dissolved in a diluent solvent and suspended in an inert hydrocarbon liquid immiscible with said monomer solution, the improvement which comprises employing as components in said suspension a copolymer of an alkyl substituted styrene wherein said alkyl group contains from 3–8 carbon atoms and an N-vinyl heterocyclic monomer in combination with a cationic surfactant, having the formula



wherein R and R′ are hydrocarbyl radicals having from 8 to 18 carbon atoms as the suspending system, wherein said substituted styrene-N-vinyl heterocyclic copolymer is employed in an amount of 0.5 to 15 percent and said surfactant is employed in an amount of 0.05 to 8 percent both based on the weight of the disperse phase and wherein said crosslinking monomer is employed at 0.5 to 2.5 moles per mole of vinyl monomer.

3,857,825

PROCESS FOR THE PRODUCTION OF POLYMERIC HYDROCARBONS HAVING REACTIVE SILYL END GROUPS

Roland Streck, and Heinrich Weber, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Nov. 16, 1972, Ser. No. 306,989
Claims priority, application Germany, Nov. 19, 1971, 2157405
Int. Cl. C08f 15/02
U.S. Cl. 260—88.1 R **19 Claims**

1. A process for preparing solid polymeric hydrocarbons having reactive silyl end groups by catalyzed ring opening polymerization of a cyclic olefin, which comprises reacting:

a. a cyclomonoalkene or non-conjugated cyclopolyalkene monomer capable of catalytic ring-opening polymerization having at least one metathetical unsubstituted, ethylenically unsaturated double bond in a hydrocarbon ring which contains 4, 5, 7 or more ring carbon atoms;

b. about 0.001-1.0 mole per mole of said monomer of a tetrasubstituted organic silicon compound consisting essentially of

i. at least one metathetical organic group having at least one unsubstituted, ethylenically unsaturated, nonconjugated, acyclic double bond, which group is bonded to silicon via a carbon-silicon bond;

ii. at least one hydrolyzable group bonded to a silicon atom via a carbon-silicon bond selected from the group consisting of halogen, lower alkoxy, lower alkanoyloxy, carbocyclic aroyloxy of 6–12 carbon atoms and lower ketoxime; and

iii. any remaining silicon valences bearing a carbon-silicon bond; in the presence of

c. a catalytic amount of a cycloolefin metathesis catalyst comprising:

i. a halogenated compound of a metal in Subgroups 5–7 of the Mendeleyeev Periodic Table; and

ii. a metal, metal alkyl or metal hydride of a metal in Main Groups 1-3 of the Mendeleyeev Periodic Table;

in a reaction media substantially free of conjugated diolefins, alkines, water and H-acidic compounds, at a temperature of about −50°C to +80°C to form a solid polymeric hydrocarbon chain having reactive silyl end groups.

3,857,826

FLUID, HYDROXYL-TERMINATED ETHYLENE/PROPYLENE COPOLYMERS

Robin Nikolas Greene, Wilmington, and Edward Sohl, New Castle, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 24, 1973, Ser. No. 391,455
Int. Cl. C08f 15/04
U.S. Cl. 260—88.2 R **7 Claims**

1. A fluid, substantially carbonyl-free, hydroxyl-terminated ethylene/propylene random copolymer having a number average molecular weight of about 4,000–10,000 and a hydroxyl functionality of about 1.8–3.0.

3,857,827

METHOD OF PREPARING HIGH-QUALITY VINYLIDENE FLUORIDE POLYMER IN AQUEOUS EMULSION

Julius Eugene Dohany, Berwyn, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 25, 1974, Ser. No. 436,821
Int. Cl. C08f 3/22, 15/08
U.S. Cl. 260—92.1 **5 Claims**

1. In the process of preparing vinylidene fluoride polymer by emulsion polymerization of monomer in stirred aqueous reaction medium containing a fluoroalkyl surfactant emulsifier, the improvement which comprises feeding incrementally or substantially continuously to the reaction medium the monomer and simultaneously therewith diisopropylperoxydi-

carbonate and acetone, the feed rates thereof being such that the conversion of monomer to polymer is within the range of about 30 to 250 grams per liter of reaction mixture per hour, the proportions of such ingredients being within the range of about 0.01 to about 2.5 percent of diisopropylperoxydicarbonate, and about 0.1 to 25 percent of acetone, said amounts being in percent by weight based on the total amount of monomer fed to the reaction, the temperature of the polymerization being within the range of 60°C. to 90°C. and the pressure within the range of about 300° to 100° psig.

3,857,828
DI(2-PHENOXYETHYL) PEROXYDICARBONATE

Jose Sanchez, Grand Island, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 209,435, Dec. 17, 1971, Pat. No. 3,799,966. This application Oct. 24, 1973, Ser. No. 409,129
Int. Cl. C08f *1/60*; C07c *73/10*
U.S. Cl. 260—92.8 W **3 Claims**

1. In a process for the polymerization of ethylenically unsaturated monomers, which monomers are responsive at suitable temperatures to initiating amounts of free radical polymerization initiators, the improvement which comprises employing as the initiator an initiating amount of di-(2-phenoxyethyl) peroxydicarbonate.

3,857,829
PROCESS FOR PURIFYING BLOCKED SYNTHETIC PEPTIDES

Edward L. Smithwick, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 1, 1973, Ser. No. 328,551
Int. Cl. C07c *103/52*; C07g *7/00*
U.S. Cl. 260—112.5 **6 Claims**

1. A process for separating blocked peptides which comprises the steps of:

a. swelling a resin, which is polystyrene corsslinked with from about 0.5 to about 3 percent by weight divinylbenzene, with solvent, which consists essentially of N-methyl-2-pyrrolidone, to a state of equilibrium,

b. packing a chromatographic column with the resulting swollen resin,

c. applying to the resulting packed column a solution of said blocked peptides in said solvent, and

d. eluting said blocked peptides with said solvent,

wherein at least one of said blocked peptides has a molecular weight below about 11,000.

3,857,830
PROCESS FOR PREPARATION OF LIGNIN EPOXIDE COMPOSITION AND COMPOSITION THEREOF

William Scott Briggs, Bellingham, Wash., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Nov. 13, 1972, Ser. No. 305,821
Int. Cl. C07b *1/00*
U.S. Cl. 260—124 R **16 Claims**

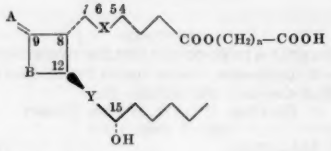
1. A process for the preparation of a water-soluble di-epoxide cross-linked lignin composition which comprises dissolving the lignin in an aqueous medium to form a solution containing from 20 to 50 weight percent lignin at a pH in the range of 8 to 13, intermixing a di-epoxide with the lignin solution to form an emulsion of the di-epoxide dispersed in the lignin solution, and reacting the di-epoxide with the lignin at a temperature in the range of 75°C to reflux temperature at a pH in a range of 8 to 13 to the extent that the phenolic hydroxyl content of the lignin is decreased by from about 40 to 95 percent, said di-epoxide being a long-chained di-epoxide having linking atoms selected from the group consisting essentially of carbon, nitrogen, sulfur, and oxygen, and said di-epoxide having a molecular weight in the range of 120 to 1,800 with the epoxy groups being on terminal ends of the long chain, said terminal ends being alkylene groups having at least 3 carbon atoms.

3,857,831
W-CARBOHYDROXYALKYL ESTERS OF PROSTAGLANDINS

Masaki Hayashi, and Hajimu Miyake, both of Osaka, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

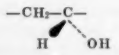
Filed Aug. 21, 1973, Ser. No. 390,269
Claims priority, application Japan, Aug. 24, 1972, 47-84800
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 R **13 Claims**

1. Carboxyalkyl esters of prostaglandins of the general formula:



wherein A represents =O or

and B represents



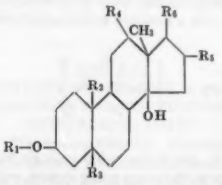
or, when A represents =O, additionally the group —CH=CH—, X represents $-CH_2CH_2-$ or cis —CH=CH—, Y represents $-CH_2CH_2-$ or trans —CH=CH—, and n represents an integer from 4 to 10, and cyclodextrin clathrates and non-toxic salts thereof.

3,857,832
PROCESS FOR THE PREPARATION OF CARDIOTONIC GLYCOSIDES

Johannes Hermann Hartenstein, Wittental, and Gerhard Satzinger, Gundelfingen, both of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 21, 1972, Ser. No. 236,587
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 **4 Claims**

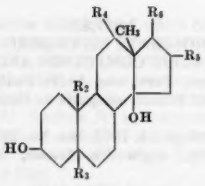
1. A process for the preparation of glycosides of the general formula I:



(I)

wherein R_1 is a glycosidyl or substituted glycosidyl moiety, R_2 is an aldehyde or methyl group, R_3, R_4, and R_5 are each a hydrogen atom or a hydroxyl group, and R_6 is a butenolide or an α-pyrone-ring, comprising:

A. reacting, in an inert solvent, a steroid aglycone of the general formula II:



(II)

wherein R_1, R_3, and R_6 have the above meanings, and R_4 and R_5 are hydrogen atoms, hydroxyl groups, or lower acyloxy groups, with a poly-O-acylglycosidyl halide, wherein the glycosidyl moiety is glucose, rhamnose, mannose, xylose, or allose and the halide moiety is chlorine, bromine, or iodine;

B. removing the water of reaction formed by means of azeotropic distillation, and;

C. saponifying the acylated glycosides thus obtained;

wherein the improvement comprises said reaction of Step A, above, being carried out in the presence of a celite-heavy metal salt precipitate complex wherein the anion of said salt is a carbonate, oxide, or cyanide radical, and the cation of said salt is an element of group I*b* or II*b* of the periodic table.

3,857,833

PROCESS AND APPARATUS FOR THE UNIFORM ALKALIZATION OF CELLULOSE

Klaus Warzecha; Klaus Stolting, and Wolfgang Schminke, all of Wiesbaden-Biebrich, Germany, assignors to Hoechst Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 7, 1970, Ser. No. 95,830

Claims priority, application Germany, Dec. 8, 1969, 1961455

Int. Cl. C08b *1/08, 1/10, 1/14*

U.S. Cl. 260—233 **5 Claims**

1. A process for the production of uniformly mercerized alkali cellulose which comprises introducing pulverized cellulose into an upwardly directed gas current, and spraying alkali hydroxide solution countercurrently to the gas current, the gas current having a lifting force such that any cellulose particles which have not been wetted or have been only insufficiently wetted are maintained in the turbulent zone, whereas cellulose particles which have been reacted to the desired degree sink, due to their higher specific gravity, against the gas current to a zone where they are no longer subject to the action of alkali hydroxide solution.

3,857,834

REAGENTS FOR ALDEHYDE SYNTHESIS

Wataru Nagata, Nishinomiya, and Yoshio Hayase, Sakai, both of Japan, assignors to Shiongi & Co., Ltd., Osaka, Japan

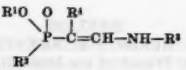
Division of Ser. No. 803,106, Feb. 27, 1969, Pat. No. 3,673,284. This application Apr. 6, 1972, Ser. No. 241,672

Claims priority, application Japan, Mar. 7, 1968, 43-14901; Mar. 19, 1968, 43-18134; Mar. 19, 1968, 43-18135; Mar. 30, 1968, 43-20805

Int. Cl. C07c *173/00*

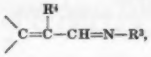
U.S. Cl. 260—239.55 C **3 Claims**

1. A method for applying compounds of the formula:

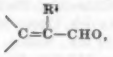


to formyl olefination, wherein R^1 is a lower alkyl group, R^2 is a member selected from the group consisting of R^1O, lower alkyl groups, aralkyl groups of 7 – 8 carbon atoms and aryl groups of 6 – 7 carbon atoms, R^3 is a member selected from the group consisting of acyclic or cyclic alkyl groups of 1 – 6 carbon atoms and aryl groups of 6 – 7 carbon atoms, and R^4 is a member selected from the group consisting of hydrogen, lower alkyl groups, aralkyl groups of 7 – 8 carbon atoms, lower alkoxycarbonyl groups, and halogen atoms, which comprises reacting the said compound with a carbonyl compound

selected from the group consisting of aldehydes and ketones of acyclic compounds, cyclic compounds and aromatic compounds, in an aprotic solvent selected from the group consisting of an ether, tetrahydrofuran, 1,2-dimethoxyethane, benzene, toluene, xylene, and N,N-dimethyl-formamide, in the presence of a basic catalyst selected from the group consisting of sodium methoxide, potassium methoxide, sodium ethoxide, potassium ethoxide, potassium t-butoxide, sodium t-butoxide, sodium amide, potassium amide, lithium diethylamide, sodium hydride, lithium hydride, lithium triphenylmethide, methyl lithium, butyl lithium and a Grignard reagent, at a temperature ranging from −20°C to 100°C to yield a compound of the formula:



wherein R^3 and R^4 each has the same meaning as defined above, and hydrolyzing the latter in an acid medium selected from the group consisting of a diluted solution of oxalic acid, acetic acid-sodium acetate-water, and tartaric acid-sodium tartrate water, to yield a compound of the formula:



wherein R^4 has the same meaning as defined above.

3,857,835

1-(5-(P-NITRO PHENYL)FURFURYLIDENE) AMINO)-5,6-DIHYDROURACIL

Ralph L. White, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,464

Int. Cl. C07d *51/30*

U.S. Cl. 260—240 G **1 Claim**

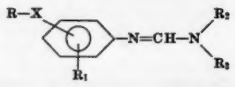
1. 1- [5-(p-Nitrophenyl)furfurylidene]amino -5,6-dihydrouracil.

3,857,836
HERBICIDAL AGENTS

Gerhard Horlein, Frankfurt am Main; Hubert Schonowsky, Neu-Isenburg, both of Germany; Georg Gustav Gassner, deceased, late of Kelkheim/Taunus, Germany (by Margot Gassner nee Heinemann, heiress); Peter Langeluddeke, Diedenbergen/Taunus, and Adolf Studeneer, Kelkheim/-Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft vormals, Frankfurt/Main, Germany

Filed Mar. 22, 1972, Ser. No. 237,127
Claims priority, application Germany, Mar. 23, 1971, 2113978
Int. Cl. C09b *23/00*
U.S. Cl. 260—240 G 11 Claims

1. A Compound of the formula



in which

R is an alkyl radical of from 1 to 3 carbon atoms or an alkenyl radical of 2 carbon atoms containing at least one chlorine or fluorine atom linked to each carbon atom, said radical R further containing at least one hydrogen atom;

R_1 is hydrogen, chlorine, methyl, methoxy, or trifluoromethyl;

R_2 and R_3 each is alkyl having from 1 to 3 carbon atoms; or R_2 and R_3 together represent an alkylene or an oxalkylene of from 4 to 6 carbon atoms, and

X is oxygen or sulfur;

or the hydrochloride, sulfate, nitrate, chlorate, perchlorate or phosphate salt thereof. --

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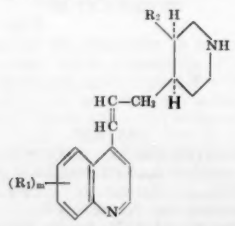
3,857,837
PROCESSES AND INTERMEDIATED FOR QUININE, QUINIDINE, ISOMERS AND DERIVATIVES THEREOF

Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovich, Upper Montclair, N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 212,774, Dec. 27, 1971, Pat. No. 3,772,302, which is a continuation-in-part of Ser. No. 104,784, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 837,354, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,914, July 2, 1968, abandoned. This application Aug. 1, 1973, Ser. No. 384,523
Int. Cl. C09b *23/00*
U.S. Cl. 260—240 R 3 Claims

1. A compound of formula



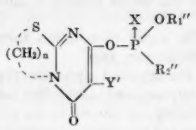
wherein m is 0, 1 or 2; R_1 is hydrogen, hydroxy, halogen, trifluoromethyl, lower alkyl, lower alkoxy or, when m is 2, R_1 with an adjacent R_1, additionally is methylenedioxy; and R_2 is vinyl or lower alkyl; its antipode or racemate.

3,857,838
ORGANOPHOSPHATE ESTER DERIVATIVES OF HETEROCYCLIC COMPOUNDS AND PROCESS

Jacques Perronnet, Paris, and Andre Poittevin, Vaires-sur-Marne, both of France, assignors to Roussel Uclaf, Paris, France

Filed Sept. 12, 1972, Ser. No. 288,393
Claims priority, application France, Sept. 16, 1971, 71.33434
Int. Cl. C07d *51/46*
U.S. Cl. 260—243 R 4 Claims

1. An organo phosphate ester having the formula



wherein

n represents an integer from 2 to 3,

Y' represents a member selected from the group consisting of hydrogen, alkyl having one to six carbon atoms, halo and alkylthio having one to six carbon atoms,

X represents a member selected from the group consisting of sulfur and oxygen,

R_1'' represents an alkyl having one to four carbon atoms,

R_2'' represents a member selected from the group consisting of alkoxy having one to four carbons atoms, alkoxyalkoxy having one to four carbon atoms alkoxyalkoxy having one to four carbon atoms in each alk, and

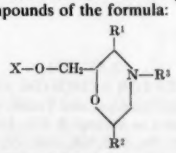
where R_1' and R_2' are members selected from the group consisting of hydrogen and alkyl having one to three carbon atoms.

3,857,839
FOR CYCLISING 1-ARYLOXY-3 BETA-SUBSTITUTED ETHYLAMINO-2-PROPANOLS

Stanley Arnold Lee, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 44,644, June 8, 1970, Pat. No. 3,713,890. This application Oct. 19, 1972, Ser. No. 299,174
Claims priority, application Great Britain, June 20, 1969, 31255/69; Oct. 13, 1969, 50130/69
Int. Cl. C07d *87/32*
U.S. Cl. 260—247.7 C 6 Claims

1. A process for the manufacture of morpholine derivatives selected from compounds of the formula:



wherein R^1 is hydrogen, R^2 is hydrogen or alkyl of up to 3 carbon atoms, R^3 is hydrogen and X is phenyl or naphthyl which is unsubstituted or phenyl which is substituted by one or two substituents selected from halogen, alkyl, alkoxy and alkylthio each of up to 10 carbon atoms, trifluoromethyl, alkenyl and alkenyloxy each of up to 6 carbon atoms, phenyl, phenoxy, benzyloxy, hydroxy, indanyl or tetrahydronaphthyl,

and the acid-addition salts thereof, which comprises the step of cyclising a compound of the formula:

$$X-O-CH_2.CHOH.CHR^1.NR^3.CH_2.CHR^2-Z$$

wherein X, R^1, R^2 and R^3 have the meanings stated above and wherein Z is chlorine or bromine or a substituent of the formula $-OSO_2OR^4$, wherein R^4 is hydrogen, methyl, ethyl, phenyl or p-tolyl, or an acid-addition salt thereof, in a diluent or solvent at a temperature of between 0° and 100°C., and in the presence of a base.

3,857,840

PYRIDO-1,2,3-TRIAZINES

Kurt Rufenacht, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

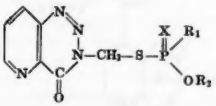
Filed Mar. 12, 1973, Ser. No. 340,430

Claims priority, application Switzerland, Mar. 24, 1972, 4373/72

Int. Cl. C07d *57/34*

U.S. Cl. 260—248 AS **6 Claims**

1. A compound of the formula



wherein

R_1 represents C_1–C_6-alkyl, C_1–C_6-alkoxy, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy, C_1–C_6-alkoxy-C_1–C_6-alkoxy, halogeno-C_1–C_6-alkoxy, C_1–C_6-alkylthio, C_3–C_6-alkenylthio, C_1–C_6-alkoxy-C_1–C_6-alkylthio, C_1–C_6-alkylthio-C_1–C_6-alkylthio, phenyl, amino, C_1–C_6-alkylamino or di-C_1–C_6-alkylamino, R_2 represents C_1–C_6-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_1–C_6-alkoxy-C_1–C_6-alkyl or halogeno-C_1–C_6-alkyl, and

X represents oxygen or sulphur.

3,857,841

PROCESS FOR THE MANUFACTURE OF CARBOXYLIC ACID AND SULFONIC ACID CHLORIDES

Gunther Keil, Lorsbach/Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Aug. 16, 1973, Ser. No. 388,883

Claims priority, application Germany, Aug. 19, 1972, 22408839

Int. Cl. C07c *51/58*

U.S. Cl. 260—250 R **5 Claims**

1. A process for the manufacture of a carboxylic acid chloride from the corresponding carboxylic acid and phosgene, which comprises reacting the salt-like addition compound of an aliphatic, cycloaliphatic, aromatic or heterocyclic carboxylic acid having 1 or 2 hetero nitrogen atoms with an N-alkylpyrrolidone or an N,N-dialkyl-carboxylic acid amide having at least 4 carbon atoms in the molecule, in a polar, inert solvent present in weight ratio of 0.8:1 to 2.0:1 to said salt like addition compound, with 1.0 to 1.5 molar equivalents of phosgene based upon said carboxylic acid at a temperature from −30°C to +30°C, at atmospheric pressure or elevated pressure and completing the reaction by heating the reaction mixture to at most +30°C.

3,857,842

PROCESS FOR PREPARING PURINE COMPOUNDS BY REACTION OF A CARBONITRILE WITH FORMIC ACID

Norio Asai, Chiba, Japan, assignor to Sagami Chemical Research Center, Tokyo, Japan

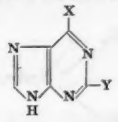
Filed Dec. 7, 1971, Ser. No. 205,764

Claims priority, application Japan, May 6, 1970, 45-38504; Dec. 9, 1970, 45-108579; Dec. 9, 1970, 45-108578

Int. Cl. C07d *57/38*

U.S. Cl. 260—252 **4 Claims**

1. A process for preparing purine compounds of the formula



wherein X is selected from the group of hydroxy and amino, and Y is selected from the group consisting of hydrogen, hydroxy and amino, comprising the step of reacting at 80° to 170°C. 4(5)-aminoimidazole-5(4)-carbonitrile with a reagent selected from the group consisting of formic acid, ammonium formate, urea and guanidine.

3,857,843

CYCLOPROPYL 1,2,4-OXADIAZOLYLDIAZINES

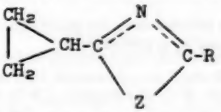
William Joseph Fanshawe, Pearl River, N.Y., and Sidney Robert Safir, River Edge, N.J., assignors to American Cyanamid Company, Stanford, Conn.

Division of Ser. No. 288,219, Sept. 11, 1972, Pat. No. 3,770,739. This application Apr. 2, 1973, Ser. No. 347,307

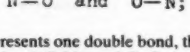
Int. Cl. C07d *51/36*

U.S. Cl. 260—256.4 R **2 Claims**

1. A cyclopropyl-1,2,4-oxadiazolyldiazine of the formula:



wherein Z is a trivalent radical selected from the group consisting of



the dotted line represents one double bond, the position being dependent upon the definition of Z; R is pyrimidyl and a pharmaceutically acceptable salt thereof.

3,857,844

CERTAIN NITROGEN CONTAINING BARBITURIC ACID DERIVATIVES

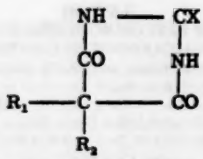
Leslie Frederick Wiggins, Berkshire; John William James, and Maurice Edward Gittos, both of Buckinghamshire, all of England, assignors to Aspro-Nicholas Limited, London, England

Continuation-in-part of Ser. No. 276,977, April 30, 1963, abandoned, which is a continuation-in-part of Ser. No. 75,911, Dec. 15, 1960, abandoned Ser. No. 277,431, May 2, 1963, Pat. No. 3,312,703. This application Feb. 11, 1966, Ser. No. 526,707

Int. Cl. C07d *51/20, 51/24*

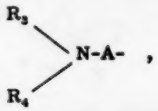
U.S. Cl. 260—256.5 R **9 Claims**

1. A compound having anti-Parkinsonism activity selected from the class consisting of compounds of the formula:



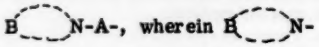
and pharmaceutically acceptable salts thereof, in which formula X is selected from the group consisting of oxygen and sulphur, R_1 is selected from the group consisting of:

A.



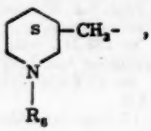
wherein R_3 and R_4 are selected from the group consisting of methyl and ethyl, and A is selected from the group consisting of 2-ethylene and 3-propylene;

B.



is selected from the group consisting of pyrrolidino, piperidino, morpholino, piperazino and homopiperazino, and A is selected from the group consisting of 2-ethylene and 3-propylene; and

C.



wherein R_6 is selected from the group consisting of hydrogen and methyl; and R_2 is phenyl.

3,857,845

1-[3-(4-METRACHLOROPHENYL-1-PIPERAZINYL)-PROPYL]-3,4-DIETHYL-Δ -1,2,4-TRIAZOLIN-5-ONE

Giuseppe Palazzo, Rome, Italy, assignor to Aziende Chimiche Ruinite Angeline Franceso A.C.R.A.F. S.p.A., Rome, Italy

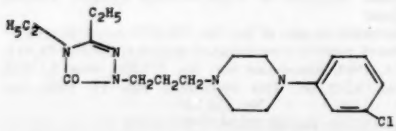
Filed Oct. 15, 1973, Ser. No. 406,432

Claims priority, application Italy, Oct. 16, 1972, 53380/72

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 PH **1 Claim**

1. 1-[3-(4-meta-Chlorophenyl-1-piperazinyl)-propyl]-3,4-diethyl-Δ^2-1,2,4-triazolin-5-one of the formula:



(I)

or the pharmaceutically acceptable acid-addition salts thereof.

3,857,846

α-[1-BENZOYL-3R-ALKYL-4(R)-PIPERIDYLMETHYL]β-XO-β(6,7 SUBSTITUTED-4 QUINOLYL)PROPIONIC ACID AND RACEMATES

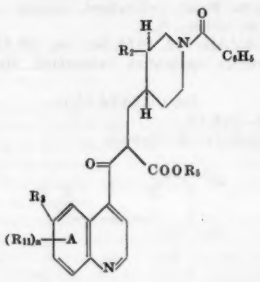
Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 212,648, Dec. 27, 1971, Pat. No. 3,753,992, which is a continuation-in-part of Ser. No. 104,785, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 837,304, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,913, July 2, 1968, abandoned. This application Apr. 26, 1973, Ser. No. 354,822

Int. Cl. C07d *43/24*

U.S. Cl. 260—287 R **9 Claims**

1. A compound of the formula



IXa

wherein n is 1 or 2; R_2 is ethyl or vinyl; R_5 is lower alkyl of 1 to 7 carbon atoms; R_{11} is hydrogen, methyl, methoxy, ethyl, propyl, butyl, trifluoromethyl, or chloro, or when n is 2, R_{11} taken together with an adjacent R_{11} is also methylenedioxy; when R_{11} is hydrogen, R_3 is methyl, ethyl, propyl, butyl, trifluoromethyl, or chloro; when R_{11} is other than hydrogen and n is 1, R_3 is methy, methoxy, ethyl, propyl, butyl, hydrogen, trifluoromethyl or chloro, or taken together with an adjacent R_{11}, is methylenedioxy; and when R_{11} is other than hydrogen and n is 2, R_3 is hydrogen, and antipodes or racemates thereof.

3,857,847

6,7 SUBSTITUTED 4 (3[3(R) ALKYL, 4(S)PIPERIDYL]-2-OXOPROPYL)QUINOLINE AND RACEMATES

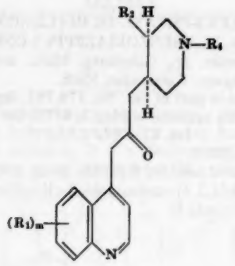
Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 212,774, Dec. 27, 1971, Pat. No. 3,772,302, which is a continuation-in-part of Ser. No. 104,784, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 837,354, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,914, July 2, 1968, abandoned. This application Aug. 1, 1973, Ser. No. 384,557

Int. Cl. C07d *43/24*

U.S. Cl. 260—287 R **8 Claims**

1. A compound of the formula



wherein m is 0, 1 or 2; R_1 is hydrogen, hydroxy, chloro, trifluoromethyl, methyl, methoxy, ethyl, propyl, butyl, or, when m is 2, R_1 with an adjacent R_1, additionally is methylenedioxy; R_2 is vinyl or ethyl; and R_4 is hydrogen, lower alkanoyl of 1–7 carbon atoms; its antipode or racemate.

3,857,848

3-(2-OXO-2-PHENYLETHYL)QUINUCLIDINES AND PROCESS THEREFOR

Roland Yves Mauvernay, Riom; Norbert Busch, Yssac La Tourette; Andre Monteil, Gerzat; Jacques Simond, Chamalieres, and Jacques Moleyre, Menetrol, all of France, assignors to Societe Anonyme Centre Europeen De Recherches Mauvernay, Puy-de-Dome, France

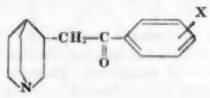
Filed May 9, 1973, Ser. No. 359,576

Claims priority, application France, May 10, 1972, 72.16746

Int. Cl. C07d *39/06*

U.S. Cl. 260—293.53 **10 Claims**

1. A derivative of quinuclidine having the general formula:



(I)

wherein the substituent X is a hydrogen atom, a halogen atom, a $-CF_3$ radical or a lower alkoxy radical.

3,857,849

2-AMINO-1,4-DIHYDROPYRIDINE DERIVATIVES

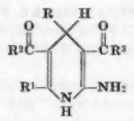
Horst Meyer; Friedrich Bossert, both of Wuppertal-Elberfeld; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 336,639, Feb. 28, 1973,. This application Mar. 27, 1974, Ser. No. 455,304

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 D **4 Claims**

1. A compound of the formula:



wherein

R is a heterocyclic ring selected from the group consisting of pyridyl, thenyl, furyl and pyrryl, said heterocyclic ring being unsubstituted or substituted by one or two members selected from the group consisting of lower alkyl, lower alkoxy and halogeno;

R^1 is hydrogen or lower alkyl;

R^2 is lower alkoxy, lower alkoxy(lower alkoxy), alkenyloxy of 2 to 4 carbon atoms, alkynyloxy of 2 to 4 carbon atoms, amino, lower alkylamino or di(lower alkyl)amino; and

R^3 is lower alkoxy, lower alkoxy(lower alkoxy), alkenyloxy of 2 to 4 carbon atoms, alkynyloxy of 2 to 4 carbon atoms, amino, lower alkylamino or di(lower alkyl)amino.

3,857,850

PYRIDOBENZOTHIADIAZEPINE COMPOUNDS

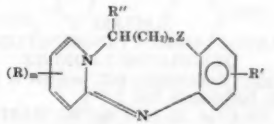
Harry Louis Yale, East Brunswick, and Ramesh B. Petigara, Somerset, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 4, 1973, Ser. No. 347,938

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 B **2 Claims**

1. A compound of the formula



wherein

m is 1 or 2;

R is the same or different and is hydrogen, halogen (F, Cl, or Br), alkyl of from one to four carbons, alkoxy of from one to four carbons, alkylthio of from one to four carbons, benzyl, phenethyl, phenyl, phenoxy, phenylthio or mono-substituted phenyl wherein the substituent may be halogen (F, Cl, Br or I), alkyl of from one to four carbons, alkoxy of from one to four carbons, or trifluoromethyl; provided that when R is halogen, R occupies only the 3- or 5-position in the original 2-aminopyridine;

R′ is hydrogen, halogen (F, Cl or Br), alkyl of from one to four carbons, phenyl, dialkylamidosulfonyl wherein each alkyl radical is from one to four carbons or trifluoromethyl;

n is 0 or 1;

R'' is alkyl of from 1 to 4 carbons
and Z is S or SO_2, and pharmaceutically acceptable acid-addition salts.

3,857,851
1,4-DIHYDRO-4-OXO-1,8-NAPHTHYRIDINE-3-CARBOXALDEHYDES

George Y. Lesher, Schodack, and Monte D. Gruett, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 338,613, March 6, 1973,. This application Mar. 22, 1974, Ser. No. 453,929
Int. Cl. C07d *31/36*
U.S. Cl. 260—295 N 4 Claims

1. A compound selected from 1,4-dihydro-4-oxo-7-Q-1,8-naphthyridine-3-carbonaldehyde and its tautomeric 4-hydroxy-7-Q-1,8-naphthyridine-3-carboxaldehyde, where Q is lower-alkyl, lower-alkanoyloxymethyl, 4(or 3)-pyridyl or 4(or 3)-pyridyl having one or two lower-alkyl substituents.

3,857,852
CRACKLE FINISH COATING OF ARYLENE SULFIDE POLYMER CONTAINING A FLUOROCARBON POLYMER

Dale O. Tieszen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 19, 1972. Ser. No. 299,066
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 F 9 Claims

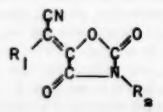
1. A process for producing coating dispersions consisting of the following steps: subjecting a poly(arylene sulfide) in particulate form to intensive milling by ball milling or rod milling with a light colored pigment in particulate form capable of withstanding a curing temperature of at least about 300°F; thereafter under less intensive conditions blending the resulting mixture by blade mixing, tumbling, or shaking with a fluorocarbon polymer in particulate form, in the presence of a liquid selected from the group consisting of water, ethylene glycol, propylene glycol, and mixtures thereof.

3,857,853
3-ALKYL-5-(ALPHA-CYANOBENZYLIDENE) OXAZOLIDINE-2,4-DIONES

Allen S. Katner, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 23, 1973, Ser. No. 353,927
Int. Cl. C07d *85/34*
U.S. Cl. 260—307 B 7 Claims

1. A compound of the formula:



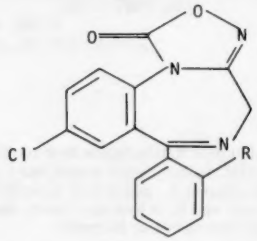
wherein R_1 is a monovalent aryl group selected from the group consisting of phenyl, p-chlorophenyl, and p-fluorophenyl and R_2 is monovalent C_1–C_{18} alkyl.

3,857,854
TRANQUILIZER 6-PHENYL-1H,4H-[1,2,4]OXADIAZALO [4,3-a][1,4]BENZODIAZEPIN-1-ONES

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 178,792, Sept. 8, 1971, abandoned. This application May 2, 1973, Ser. No. 356,372
Int. Cl. C07d *85/52*
U.S. Cl. 260—307 A 5 Claims

1. A compound selected from the group consisting of a 6-phenyl-1H,4H-[1,2,4]oxadiazolo[4,3-a][1,4]benzodiazepin-1-one of the formula II



II

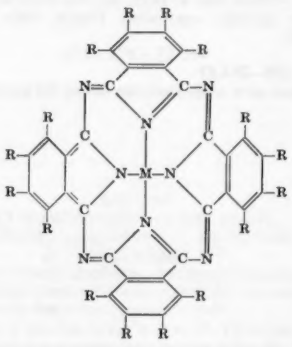
wherein R is hydrogen or chlorine and the pharmacologically acceptable acid addition salts thereof.

3,857,855
SUBSTITUTED PHTHALOCYANINE DYE DEVELOPERS AND THEIR USE IN MULTICOLOR DIFFUSION TRANSFER PROCESSES

Elbert M. Idelson, Newton Lower Falls, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

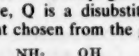
Continuation of Ser. No. 851,525, June 30, 1969, abandoned, which is a division of Ser. No. 694,167, Dec. 28, 1967, Pat. No. 3,482,972. This application June 21, 1973, Ser. No. 372,268
Int. Cl. C09b *47/04*
U.S. Cl. 260—314.5 7 Claims

1. A compound of the formula:

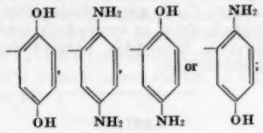


wherein it is provided that of the 16 R substituents present on the phthalocyanine ring at least three and no more than four are R^1 groups, there being no more than one R^1 group on any

one benzene ring, the remaining R substituents being hydrogen where R^1 is



wherein D is an alkylene group of from 1–6 carbon atoms inclusive, X is hydrogen or an alkyl group having from 1–6 carbon atoms inclusive, Q is a disubstituted phenyl silver halide developing agent chosen from the group consisting of



and M is a metal selected from the group consisting of cobalt, nickel, copper, chromium, magnesium and zinc.

3,857,856
4-OXO-4H-1-BENZOPYRAN AND 4-OXO-4H-1-THIABENZOPYRAN COMPOUNDS

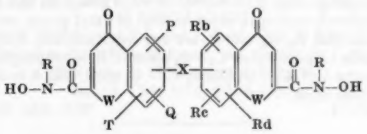
Hugh Ca[illegible]rns, and Norman Harold Rogers, both of Loughborough, England, assignors to Fisons Limited, London, England

Continuation-in-part of Ser. No. 260,205, June 6, 1972, abandoned. This application Sept. 26, 1972, Ser. No. 292,453

Claims priority, application Great Britain, Sept. 30, 1971, 45470/71; Oct. 18, 1971, 53568/71; Dec. 28, 1971, 60208/71; Dec. 28, 1971, 60209/71

U.S. Cl. 260—327 TH **8 Claims**

1. A compound of the formula



wherein W is oxygen or sulphur,

R is hydrogen, alkyl of 1 to 6 carbon atoms or phenyl,

X is a carbon-carbon bond, $—CH_2—$ —CHOH—, —C(R^4)$_2$—, —CO—, —CH(COOH)—, —C(=CCl_2)—NH—, —S—, —SO—, —SO_2—, or —O—, a saturated or unsaturated, straight or branched C(2 to 10) polymethylene chain optionally substituted by —OH,C(1 to 6) alkoxy, halogen, carbonyl oxygen, and optionally interrupted by an oxygen or nitrogen atom, and R^4 is an alkyl C (1 to 6) group,

or X is an —OX'O— group in which X' is a saturated or unsaturated, straight or branched C (2 to 10) polymethylene chain optionally substituted by —OH, C(1 to 6) alkoxy, halogen or carbonyl oxygen and optionally interrupted by an oxygen or nitrogen atom,

P, Q, T, Rb, Rc, and Rd, which may be the same or different, each represent hydrogen, C (1 to 10) alkyl, halogen, hydroxy, C(2 to 10) alkenyl, phenyl, C(1 to 10) alkoxy, C(2 to 10) alkenyloxy, phenyl C (1 to 4) alkoxy, hydroxy C (1 to 10) alkyl, hydroxy C (1 to 10) alkoxy, C(1 to 10) alkoxy-C(1 to 10) alkyl and C (1 to 10) alkoxy-C (1 to 10) alkoxy, and pharmaceutically acceptable salts thereof.

3,857,857
STEREOISOMERS OF 1-(1'(-O-CHLOROBENZYL)-2'-PYRRYL)-2-DISEC. BUTYLAMINO-ETHANOL

Davide Della Bella, Milan; Carlo Veneziani, Bresso; Dario Chiarino, Monza, and Unerto Maria Teotino, Milan, all of Italy, assignors to Whitefin Holding S.A., Lugano, Switzerland

Filed Oct. 24, 1972, Ser. No. 299,726

Claims priority, application Italy, Oct. 30, 1971, 30587/71; Oct. 30, 1971, 30586/71; Oct. 30, 1971, 30585/71; Oct. 30, 1971, 30588/71; July 4, 1972, 26564/72

Int. Cl. C07d *27/26*

U.S. Cl. 260—326.5 L **7 Claims**

1. The diastereoisomer of 1-[1'(o-chloro-benzyl)-2'-pyrryl]-2-di-(R,R)-sec.butylamino-ethanol, whose p-hydroxybenzoate has $[\alpha]_D^{16} = -24° \pm 3°$ (c=1% in methanol), and physiologically acceptable acid addition salts, essentially free of different optical isomers.

3,857,858
CYCLOPROPANE CARBOXYLIC ACID ESTERS

Nobushige Itaya, Minoo; Toshio Mizutani, Hirakata; Shigeyoshi Kitamura; Yositosi Okuno, both of Toyonaka, and Keimei Fujimoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

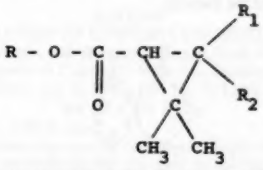
Filed Apr. 1, 1970, Ser. No. 24,858

Claims priority, application Japan, Apr. 8, 1969, 44-27529; Apr. 9, 1969, 44-27498; Apr. 9, 1969, 44-27499; May 27, 1969, 44-41505; June 3, 1969, 44-43896; June 13, 1969, 44-47003

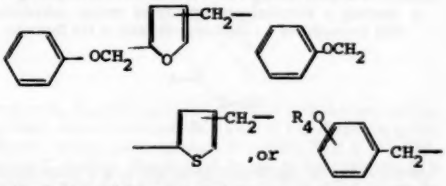
Int. Cl. C07d *63/12, 5/16*

U.S. Cl. 260—332.2 R **6 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or methyl, R_2 is methyl, 2-methyl-1-propenyl or 2-methoxycarbonyl-1-propenyl when R_1 is hydrogen, and R_2 is methyl when R_1 is methyl, and R is



wherein R_4 is allyl or propargyl.

3,857,859
DEHYDROGENATION OF TETRAHYDROFURAN AND ALKYLSUBSTITUTED TETRAHYDROFURANS

Anthony L. Tumolo, c/o Sun Oil Company, P.O. Box 426, Marcus Hook, Pa. 19061

Filed Sept. 26, 1972, Ser. No. 292,383

Int. Cl. C07d *5/14*

U.S. Cl. 260—346.1 R **5 Claims**

1. The dehydrogenation process for preparing furan and substituted furans having 1–4 alkyl groups and containing from 1 to 10 carbon atoms comprising subjecting the corresponding tetrahydrofuran to a temperature in the range of 200 to 450°C in contact with a catalyst of palladium on carbon.

3,857,860
N-CARBOXYLATED N-METHYLCARBAMIC ACID ARYL ESTERS

Engelbert Kuhle, Bergisch-Gladbach; Peter Siegle, Cologne; Wolfgang Behrenz, Cologne, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

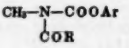
Filed June 23, 1972, Ser. No. 265,843

Claims priority, application Germany, July 2, 1971, 2132936

Int. Cl. C07d *5/00*

U.S. Cl. 260—346.2 R **3 Claims**

1. A compound according to the formula



in which

Ar is dihydrobenzofuranyl; or dihydrobenzo-furanyl substituted by alkyl of up to 4 carbon atoms, and

R is phenoxy substituted by alkoxy of up to 4 carbon atoms.

3,857,861
PROCESS FOR THE PREPARATION OF DI-LOWER ALKOXY-3,5-PHTHALIC ANHYDRIDES

Gerard Lang, Epinay-sur-Seine, France, assignor to Societe Anonyme dite: L'Oreal, Paris, France

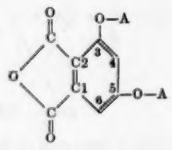
Filed Sept. 7, 1971, Ser. No. 178,425

Claims priority, application Luxembourg, Sept. 7, 1970, 61655

Int. Cl. C07c *63/14*

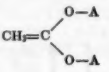
U.S. Cl. 260—346.6 **6 Claims**

1. A process for the preparation of 3,5-dialkoxy phthalic anhydride of the formula:



wherein A is alkyl having 1 to 4 carbon atoms comprising

a. reacting a monohalogen-substituted maleic anhydride with an excess of 1,1-dialkoxy ethylene of the formula:



wherein A has the significance given above, at a temperature of about −20° C to about +50° C in the presence of an anhydrous non-reactive solvent having a boiling point greater than 50°C, and

b. separating the 3,5-dialkoxy phthalic anhydride thus produced from the reaction mixture.

3,857,862
SUBSTITUTED BENZONITRILES

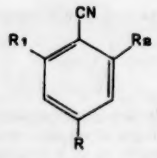
James R. Beck, Indianapolis, and Robert G. Suhr, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 23, 1973, Ser. No. 418,540

Int. Cl. C07d *5/04, 5/16*

U.S. Cl. 260—347.2 **7 Claims**

1. A compound of the formula:



wherein

R is hydrogen or trifluoromethyl;

R^1 is halo, nitro, C_1–C_3 alkoxy, furfurylthio, furfuryloxy, tetrahydrofurfurylthio, or tetrahydrofurfuryloxy; and

R^2 is furfuryloxy, furfurylthio, tetrahydrofurfuryloxy, or tetrahydrofurfurylthio.

3,857,863
CERTAIN FURYLMETHYL AND THENYL ESTERS OF CERTAIN CYCLOPROPANE CARBOXYLIC ACIDS

Nobuo Ohno; Nobushige Itaya, both of Ikeda; Toshio Mizutani, Hirakata; Yositosi Okuno, Toyonaka; Keimei Fujimoto, and Toru Kawanami, both of Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

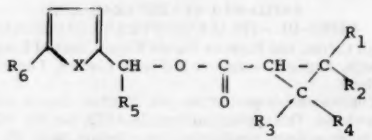
Filed Aug. 2, 1971, Ser. No. 168,369

Claims priority, application Japan, Aug. 4, 1970, 45-68459

Int. Cl. C07d *5/18, 5/20, 5/16*

U.S. Cl. 260—347.4 **17 Claims**

1. A cyclopropanecarboxylate of the formula



wherein R_1 is hydrogen atom, methyl or ethyl group; R_2 is methyl, ethyl, 2-methyl-1-propenyl or 2-methoxycarbonyl-1-propenyl group when R_1 is hydrogen atom, or R_2 is methyl or ethyl group when R_1 is methyl or ethyl group; R_3 and R_4 are respectively hydrogen atom, methyl or ethyl group, with the proviso that R_1, R_3, and R_4 are not simultaneously hydrogen; R_5 is C_3 – C_4 alkynyl or C_2 – C_4 alkenyl; R_6 is propargyl, allyl, 3-butyne-1-yl, C_1 – C_4 alkoxy C_1 – C_4 alkyl; and X is oxygen or sulfur atom.

3,857,864
ANTHRAQUINONE COMPOUNDS

Hansrudolf Schwander, Riehen; Arthur Buhler, Rheinfelden, and Peter Hindermann, Bottmingen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

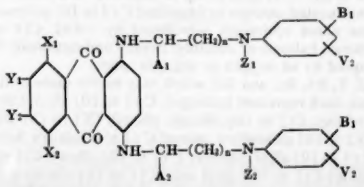
Filed Feb. 5, 1973, Ser. No. 329,516

Claims priority, application Switzerland, Feb. 7, 1972, 1737/72

Int. Cl. C09b *1/30, 1/40*

U.S. Cl. 260—372 **9 Claims**

1. Anthraquinone compounds of the formula



wherein X_1 and X_2 each represents a hydrogen atom or a

hydroxy group, Y_1 and Y_2 each represents a hydrogen or halogen atom or a sulphonic acid group, A_1 and A_2 each represents an n-alkyl radical with 1 to 3 carbon atoms or represents a hydrogen atom, B_1 and B_2 each represents a sulphonic acid or carboxy radical, Z_1 and Z_2 each represents low molecular alkanoyl or alkyl sulphonyl radical substituted by a removable chlorine or bromine atom, a low molecular alkenoyl or alkenesulphonyl radical optionally substituted by a removable chlorine or bromine atom, a 4-,5- or 6-membered carbocyclic radical bonded through a carbonyl or sulphonyl group and is substituted by a removable chlorine or bromine atom, V_1 and V_2 each represents a hydrogen or halogen atom or a lower alkyl or lower alkoxy radical, an n and m is each independently 1 or 2.

3,857,865
ESTER LUBRICANTS SUITABLE FOR USE IN AQUEOUS SYSTEMS

Robert J. Sturwold, and Fred O. Barrett, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

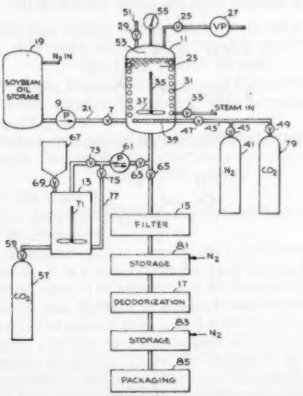
Filed Aug. 1, 1973, Ser. No. 384,674
Int. Cl. C07c *69/74;* **C10m** *3/20*
U.S. Cl. 260—407 **6 Claims**

1. An ester composition useful as a lubricant and having improved emulsifiability with water and rust protection properties comprising the condensation product of 0.05 to 0.5 equivalent polyoxyalkylene glycol having a molecular weight from about 200 to about 1000 and having recurring alkylene units containing from 2 to 4 carbon atoms, 0.5 to 0.95 equivalent monofunctional aliphatic alcohol of the formula ROH where R is an aliphatic hydrocarbon radical containing from 1 to about 20 carbon atoms and 1.0 equivalent of a dimer acid containing from about 32 to 52 carbon atoms obtained by the polymerization of a monocarboxylic acid containing from about 16 to 26 carbon atoms, said ester having an acid value less than 25, a hydroxyl value less than 25 and containing about 2 to about 40 percent by weight polyoxyalkylene glycol.

3,857,866
PROCESS FOR IMPROVING THE THERMAL STABILITY OF SOYBEAN OIL

Walter P. Gibble, and Edward J. Reid, both of Brea, Calif., assignors to Hunt-Wesson Foods, Inc., Fullerton, Calif.

Filed June 8, 1973, Ser. No. 368,014
Int. Cl. C09f *5/10;* **C11b** *3/00*
U.S. Cl. 260—420 **17 Claims**



1. A method of providing an edible soybean oil which does not develop objectionable odor or flavor for at least 10 minutes when heated to a frying temperature of from 325°F to 400°F consisting essentially of the steps of:

deaerating a body of refined soybean oil to an oxygen content of no more than 0.1 cc oxygen per 100 cc of oil;

dissolving carbon dioxide in the deaerated oil;

dispersing a minor amount of a treating agent consisting essentially of a finely divided, activated, solid, inorganic metallic salt or oxide adsorbent capable of removing color bodies from vegetable oils in the oil;

heating the dispersion in a carbon dioxide atmosphere to a temperature above 212°F for a predetermined length of time from 15 minutes to 10 hours;

filtering the oil; and

deodorizing the oil with steam under vacuum.

3,857,867
OLEFIN METALLORGANIC COMPLEXES OF SALINE TYPE AND PROCESS FOR THE PREPARATION THEREOF

Federico Maspero, Milan; Emilio Perrotti, San Donato Milanese, and Franco Simonetti, Milan, all of Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Dec. 27, 1972, Ser. No. 319,061
Claims priority, application Italy, Dec. 28, 1971, 33009/71
Int. Cl. C07f *15/00*
U.S. Cl. 260—429 R **3 Claims**

1. Complexes of the formula:

$[Rh(L)_n(CH_3CN)_a]X$

wherein L is an olefin selected from the group consisting of ethylene and cyclooctene; and X is an anion selected from the group consisting of BF_4^-, PF_6^-, ClO_4^- and NO_3^-; provided that when L is ethylene and n is 2 or 3, a is 2; and when L is cyclooctene and n is 1, a is 3 and when n is 2, a is 2 or 3.

3,857,868
PREPARATION OF DIMETHYLTIN DICHLORIDE

Robert C. Witman, and Thomas G. Kugele, both of Cincinnati, Ohio, assignors to Cincinnati Milacron, Reading, Ohio

Filed Jan. 8, 1973, Ser. No. 321,980
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **25 Claims**

1. In a process of preparing dimethyltin dichloride by reacting metallic tin with methyl chloride in the presence of a catalyst, the improvement comprising carrying out the reaction in the presence of a catalyst having the formula:

where R_1, R_2, and R_3 are alkyl of 1 to 18 carbon atoms, benzyl, phenyl, tolyl or hydrogen, R_4 is alkyl of 1 to 18 carbon atoms, benzyl, phenyl, tolyl, hydrogen or nothing, R_5 is X or $-SnX_3$ when R_4 is alkyl, phenyl, tolyl, benzyl or hydrogen and R_5 is nothing when R_4 is nothing with the proviso that when R_1, R_2, R_3 and R_4 are all hydrogen then X must be Br, and X is a halogen of atomic weight 35 to 80 at a temperature of 150° to 300°C. at a pressure of 60 to 400 psig, there being present a solvent for the methyl chloride at the start of the reaction.

3,857,869
PROCESS FOR THE PREPARATION OF BIMETALLIC SALT COMPLEXES

Roy Glen Turnbo, Deer Park, Tex., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Mar. 27, 1973, Ser. No. 345,438
Int. Cl. C07f *1/08*
U.S. Cl. 260—438.1 **7 Claims**

1. The process of preparing a catalytically-inactive liquid sorbent comprising a bimetallic salt complex having the ge-

neric formula $M_IM_{II}X_n$.Aromatic, wherein M_I is a Group I-B metal, M_{II} is a Group III-A metal, X is halogen, n is the sum of the valences of M_I and M_{II}, and Aromatic is a monocyclic aromatic hydrocarbon having 6 to 12 carbon atoms that comprises the steps of

a. mixing and reacting an M_I halide and an M_{II} halide in a reaction medium that is an aromatic hydrocarbon having 6 to 12 carbon atoms to form a solution of the bimetallic salt complex $M_IM_{II}X_n$.Aromatic in said aromatic hydrocarbon, the total amount of aromatic hydrocarbon in said solution being at least 10 mole percent of the amount of the bimetallic salt $M_IM_{II}X_n$ that is present; and

b. maintaining said solution at a temperature between about 20°C. and the boiling point of the aromatic hydrocarbon while contacting said solution with an inert gas until the gas leaving the solution contains neither M_{II} halide nor hydrogen halide.

3,857,870

FERROCENE CONTAINING MONOMERS AND COPOLYMERS

Travis E. Stevens, 1510 Montdale Rd., S.E., Huntsville, Ala. 35801, and Samuel F. Reed, Jr., 4009 Medford Dr., S.E., Huntsville, Ala. 35802

Filed July 31, 1969, Ser. No. 849,254

Int. Cl. C07f *15/02*

U.S. Cl. 260—439 CY **5 Claims**

1. A polymerizable monomer selected from pentaerythritol methacrylate tris (ferrocenoate) and pentaerythritol acrylate tris (ferrocenoate) reacted with butadiene to form a copolymer.

3,857,871

PROCESS FOR REDUCING THE ACIDITY AND HYDROLYZABLE CHLORIDE CONTENT OF POLYISOCYANATES

Richard Hatfield, Jr., Pasadena, and Howard R. Steele, Baytown, both of Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 3, 1972, Ser. No. 214,829

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 SP **2 Claims**

1. A process for lowering the acidity and hydrolyzable chloride content of a polymethylene polyphenyl polyisocyanate containing from 35 to 85 percent methylenebis(phenyl isocyanate) without concomitantly causing any significant change in viscosity or oligomeric distribution in said polyisocyante which process comprises passing said polyisocyanate, in the liquid state at a temperature within the range of about 350°F to about 450°F, downwardly through a packed column and passing a stream of inert gas counter-currently with respect to said isocyanate, the pressure in said column being substantially atmospheric, and the average residence time of said isocyanate in said column being within the range of 1 to 10 minutes.

3,857,872

CYCLOPROPANE CARBOXYLIC ACID ESTERS

John Mervyn Osbond, Hatfield, and James Charles Wickens, St. Albans, both of England, assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

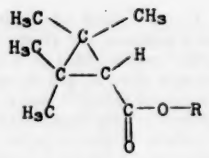
Filed May 4, 1971, Ser. No. 140,276

Claims priority, application Great Britain, June 8, 1970, 27583/70

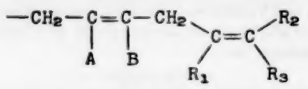
Int. Cl. C07c *69/74*

U.S. Cl. 260—468 H **7 Claims**

1. A compound of the formula:



wherein R is a group of the formula:



or

$$-CH_2-C\equiv C-CH_2-C\equiv CH$$

R_1, R_2 and R_3 are hydrogen or lower alkyl;

and A and B individually are hydrogen or A and B taken together form a carbon to carbon bond.

3,857,873

3-HYDROXY-5-(3-(SUBSTITUTED-AMINO)-2-HYDROXYPROPOXY)-BENZYL ALCOHOLS

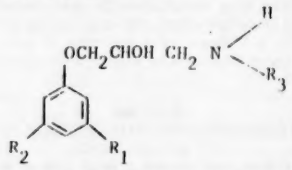
Charles F. Schwender, Lebanon, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 11, 1974, Ser. No. 441,597

Int. Cl. C07c *101/42*

U.S. Cl. 260—471 R **11 Claims**

1. A compound of the formula:



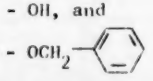
wherein R_1 is selected from the group consisting of:

— COOH,

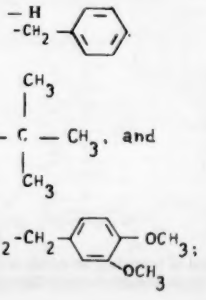
— $COOR_3$, and

— CH_2OH;

wherein R_2 is selected from the group consisting of:



wherein R_3 is selected from the group consisting of:



and the pharmaceutically acceptable salts of the above compound.

3,857,874

PROCESS FOR PRODUCING BIPHENYLPOLYCARBOXYLIC ACID ESTERS

Yataro Ichikawa, Iwakuni, Japan, and Teizo Yamaji, Potsdam, N.Y., assignors to Teijin Limited, Osaka, Japan

Filed July 21, 1970, Ser. No. 56,966

Claims priority, application Japan, July 24, 1969, 44-58811, July 25, 1969, 44-58847, 44-58844

Int. Cl. C07c *69/78*

U.S. Cl. 260—473 R **12 Claims**

1. A process for producing biphenylpolycarboxylic acid esters which comprises contacting a benzenecarboxylic acid ester having 1 or 2 carboxylic acid ester groups having at least one hydrogen atom bonded to the nuclear carbon atom with molecular oxygen or a molecular oxygen-containing gas in liquid phase at a temperature of 90°-300°C., under a partial pressure of molecular oxygen of 0.2–300 atmospheres and in the presence of a catalyst consisting essentially of palladium complexes having a β-diketo group, capable of undergoing keto/enol isomerization, as a ligand, said catalyst being at least partially soluble in the reaction system.

3,857,875

SULFONYLDIALKANOIC ACID ESTERS OF 2,3-DIBROMO-1-ALKANOLS

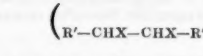
Donnie G. Brady; Roy A. Gray, and Richard C. Doss, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 28, 1972, Ser. No. 292,899

Int. Cl. C07c *147/02*

U.S. Cl. 260—481 R **2 Claims**

1. A compound of the formula



wherein X is bromine, wherein R′ is hydrogen or an alkyl group containing 1 to 4 carbon atoms, and R″ is an alkylene radical of 1 to 4 carbon atoms, said radicals being branched or linear, said radicals being the same or different, the total number of carbon atoms in said compound being within the range of from about 10 to about 30.

3,857,876

POLYESTERS FROM THE REACTION OF POLYOLS AND A MIXTURE OF MERCAPTOALKANOIC AND THIOALKANOIC ACIDS

Faber B. Jones; Ralph P. Williams, and Richard C. Doss, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 888,910, Dec. 29, 1969, abandoned. This application Oct. 24, 1972, Ser. No. 299,832

Int. Cl. C07c *149/20*

U.S. Cl. 260—481 R **6 Claims**

1. The polyester-polylsulfide-polythiol reaction product formed by contacting

I. a hydrocarbon polyol represented by the formula $Y(OH)_x$ wherein Y is a hydrocarbon moiety having from 2 to 40 carbon atoms per moiety, x is an integer in the range of 2 to 20, and the number of carbon atoms per molecule is equal to or greater than x, and mixtures thereof, with the further provison that the number of hydroxy groups and number of carbon atoms per molecule be on average more than 2, and an acid mixture consisting of

II. 5 to 95 weight percent of a mercaptoalkanoic acid represented by the formula $HS(CR_2)_nCOOH$ wherein R is hydrogen or an alkyl having from 1 to 5 carbon atoms, the number of carbon atoms in all R groups per molecule is no more than 10, and n is an integer in the range of 1 to 5, and

III. 95 to 5 weight percent of a thiodialkanoic acid represented by the formula $HOOC(CR_2)_n—S—(CR_2)_n—COOH$ wherein the number of carbon atoms in all R groups per molecule is no more than 20, and R and n are as previously defined, or a mixture of said thiodialkanoic acid and the analogous dithiodialkanoic acid such that up to one mole of dithiodialkanoic acid is present for each two moles of thiodialkanoic acid,

said contacting being effected at a temperature in the range of about 50°–250°C and under esterification conditions such that at least 80 percent of the hydroxy groups of said (I) polyol are reacted with carboxylic groups of said acid mixture of (II) and (III) acids to form ester groups, the amounts of (I) polyol, (II) and (III) acids present during said contacting being sufficient to provide a ratio of hydroxy groups of said (I) polyol to carboxylic groups of said (II) and (III) acids in the range of 0.8:1 to 1.2:1.

3,857,877

8-HYDROXY QUINOLINE DERIVATIVES

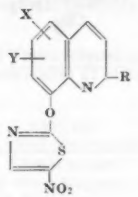
Shankar Somasekhara, and Navinchandra Vasantrai Upadhyaya, both of Wadi Wadi, Baroda, India, assignors to Karamchand Premchand Private Limited, Ahmedabad, Gujarat State, India

Filed Jan. 12, 1973, Ser. No. 323,024

Int. Cl. C07d *33/36*

U.S. Cl. 260—283 S **6 Claims**

1.8-Hydroxy quinolines of the formula I



wherein

R is H or methyl, X and Y are the same or different halogens like, chlorine, bromine or iodine in any two of the positions **5**, **6** and **7** of the quinoline ring.

3,857,878

STABLE COMPOSITIONS FOR INHIBITING POLYMERIZATION OF UNSATURATED CARBOXYLIC ACID ESTERS

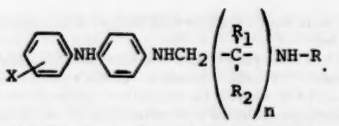
Alfred Bay Sullivan, Wadsworth, and Gene Ray Wilder, Medina, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 23, 1974, Ser. No. 435,718

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **6 Claims**

1. A monomer composition consisting essentially of unsaturated carboxylic acid ester and, in amount effective to inhibit polymerization of the ester, an inhibitor of the formula



in which R, R_1 and R_2 independently are hydrogen or lower alkyl, X is hydrogen, chloro, trichloromethyl, trifluoromethyl, lower alkyl, lower alkoxy or phenoxy and *n* is 1–5.

3,857,879

AMINE SALTS OF SUBSTITUTED SUCCINAMIC ACIDS

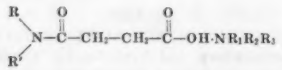
Walter W. Abramitis, 1315 59th St., Downers Grove, Ill. 60515

Continuation-in-part of Ser. No. 687,438, Dec. 4, 1967, abandoned. This application Oct. 5, 1970, Ser. No. 78,240

Int. Cl. C07c *103/14*

U.S. Cl. 260—501.11 4 Claims

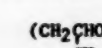
1. A compound of the formula:



wherein R is a member of the group consisting of H and alkyl having 1 to 18 carbon atoms;

R′ is alkyl having 1 to 18 carbon atoms;

R_1 and R_2 are each a member of the group consisting of alkyl having 1 to 4 carbon atoms, $(CH_2CH_2O)_mH$, and



in which *m* and *n* are integers from 1 to 15; and

R_3 is alkyl having 8 to 22 carbon atoms.

3,857,880

CYCLOPROPANE CARBOXYLIC ACID DERIVATIVES

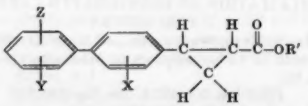
Margaret H. Sherlock, Bloomfield, and Nathan Sperber, North Caldwell, both of N.J., assignors to Schering Corporation, Bloomfield, N.J.

Continuation-in-part of Ser. No. 164,457, July 20, 1971, abandoned, which is a division of Ser. No. 754,743, Aug. 22, 1968, Pat. No. 3,674,832. This application Sept. 3, 1971, Ser. No. 177,871

Int. Cl. C07c *69/76*

U.S. Cl. 260—515 R 4 Claims

1. A composition of matter of the formula:



wherein X is hydrogen, halogen, trifluoromethyl, hydroxy, nitro, lower alkyl or lower alkylthio; Y and Z are hydrogen; and R′ is hydrogen, an alkyl radical having 1 to 12 carbon atoms or a pharmaceutically acceptable cation.

3,857,881

PROCESS FOR THE SEPARATION AND RECOVERY OF METHYLTEREPHTHALIC ACID AND 4-METHYLISOPHTHALIC ACID FROM A MIXTURE THEREOF

Noritsugu Saiki; Takeshi Fujii, and Gentaro Yamashita, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 3, 1971, Ser. No. 168,576

Claims priority, application Japan, Dec. 25, 1970, 45-117536; Dec. 25, 1970, 45-117556; Dec. 28, 1970, 45-123955

Int. Cl. C07c *51/48*

U.S. Cl. 260—525 15 Claims

1. A process for separating and recovering methylterephthalic acid from a mixture of methylterephthalic acid and **4-methylisophthalic** acid in the form of a salt and at a higher concentration, said process comprising bringing a mixture of the salts of methylterephthalic acid and **4-methylisophthalic** acid with at least one base selected from the group consisting of

a. ammonia,

b. aliphatic diamines of **2 - 12** carbon atoms,

c. diamines of the formula

$$H_2N—(CH_2—\phi—(CH_2—NH_2$$

wherein *n* is a positive integer from 1 to 3, ϕ is a member selected from the group consisting of p- and m-phenylene and P- and m-cyclohexylene,

d. bis-(p-aminocyclohexyl) methane, and

e. piperazine,

into contact with a mixed solvent of at least **10** percent by weight of water and at least one hydrophilic organic solvent selected from the group consisting of

1. mono- and dihydric alcohols of 1 – 3 carbon atoms,
2. monomethyl and monoethyl ethers of ethylene glycol, and
3. dioxane,

to separate from the mixed solvent in a solid state a salt of methylterephthalic acid and said base or a mixture of salts of methylterephthalic acid and 4-methylisophthalic acid, said mixture containing said salt of methylterephthalic acid and said base at a higher concentration, and thereafter recovering said solid product.

3,857,882

PRODUCTION OF ALPHA-CHLOROACRYLIC ACID

Eberhard Auer, Erftstadt Liblar; Wilhelm Vogt, Huerth-Efferen, and Klaus Gehrmann, Hurth-Knapsack, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt-/Main, Germany

Filed Aug. 13, 1973, Ser. No. 387,754

Claims priority, application Germany, Aug. 18, 1972, 2240663

Int. Cl. C07c *51/00*

U.S. Cl. 260—539 R 6 Claims

1. A process for making α-chloracrylic acid comprising intimately contacting acrylic acid with chlorine gas and separating the resulting crude reaction product consisting predominantly of 2,3-dichloropropionic acid into α-chloracrylic acid and hydrogen chloride by introducing the said crude reaction product into a catalyst zone heated to temperatures between 80° and 160°C and containing at least one known dehydrochlorination catalyst and by continually distilling off α-chloracrylic acid under pressures between 10 and 100 mm of mercury.

3,857,883

N-CHLOROTHIO UREA PRODUCTION

James D. Cleveland, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

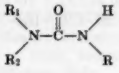
Filed May 8, 1972, Ser. No. 250,895

Int. Cl. C07c *127/20*

U.S. Cl. 260—545 R 9 Claims

1. In the process for producing an N-chlorothio urea derivative which comprises reacting substantially equimolar

amounts of a urea reactant of the formula



wherein R, R^1 and R^2 independently are hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 4 carbon atoms, aryl of 6 to 10 carbon atoms, aryl of 6 to 10 carbon atoms substituted with 1 to 4 halogen atoms of atomic number 9 to 35, trichlormethyl, trifluoromethyl, nitro groups or alkoxy groups individually of 1 to 4 carbon atoms, and sulfur dichloride in the presence of an organic base acceptor to complex the hydrochloric acid formed in the reaction, the improvement which comprises maintaining during reaction the moles of uncomplexed acceptor to the total moles of urea reactant and N-chlorothio urea product at a ratio of less than 0.2:1 by the controlled addition of the acceptor to a mixture of the urea reactant and sulfur dichloride in an inert diluent.

3,857,884

TETRAMETHYLALKANE DERIVATIVES

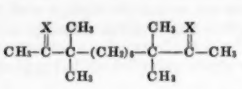
George W. Moersch, and Paul L. Creger, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Division of Ser. No. 29,704, April 17, 1970, Pat. No. 3,742,068. This application Jan. 30, 1973, Ser. No. 327,977

Int. Cl. C07c *133/02*

U.S. Cl. 260—554 **2 Claims**

1. A compound of the formula



in which X is a member of the class consisting of oxo and semicarbazono.

3,857,885

PHOTOPOLYMERIZABLE COMPOUNDS

Raimund Josef Faust, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

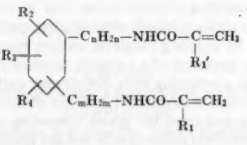
Filed Dec. 28, 1971, Ser. No. 213,170

Claims priority, application Germany, Dec. 31, 1970, 2064742

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 N **5 Claims**

1. A photopolymerizable compound of the general formula



wherein

R_1 and R_1' are selected from the group consisting of hydrogen atoms or methyl groups,

R_2, R_3, R_4 are selected from the group consisting of hydrogen atoms or alkyl groups with 1 to 4 carbon atoms,

m is 0, 1 or 2, and

n is 1 or 2.

3,857,886

PROCESS FOR THE PRODUCTION OF PURE N-ALKYL FORMAMIDES

Jorg Hensel; Hans Schaefer, and Gerd Schreyer, all of Grosssauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed Aug. 29, 1972, Ser. No. 284,544

Claims priority, application Germany, Sept. 3, 1971, 2144229

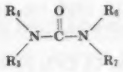
Int. Cl. C07c *103/30*

U.S. Cl. 260—561 R **21 Claims**

1. A process for the production of pure N-alkyl formamide from the aqueous solution in which it is formed in the Ritter reaction of an olefin or alcohol with hydrogen cyanide in the presence of a strong acid selected from the group consisting of sulfuric acid, hydrochloric acid, phosphoric acid and trifluoroacetic acid comprising extracting the unneutralized strongly acid solution with a polar acid stable organic solvent which is selected from the group consisting of:

(a)

(b)



where R_1, R_2 and R_3 are selected from the group consisting of alkyl, aryl, and aralkyl groups and R_1, R_2 and R_3 together contain a total of 8 to 39 carbon atoms and R_4, R_5, R_6 and R_7 individually are selected from the group consisting of alkyl of 1–5 carbon atoms; and

c. a chlorinated hydrocarbon selected from the group consisting of chloroform and methylene chloride.

3,857,887

5-SUBSTITUTED BENZOPHENONE HYDRAZONE COMPOUNDS

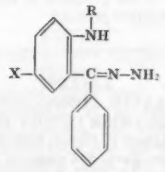
Minoru Shindo, Tokyo; Morio Kakimoto, Yono, and Hiroyuki Nagano, Ageo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 242,825, April 10, 1972, Pat. No. 3,796,754. This application June 26, 1973, Ser. No. 373,660

Int. Cl. C07c *109/16*

U.S. Cl. 260—566 B **5 Claims**

1. 5-Substituted benzophenone hydrazone compounds which are represented by the general formula:



wherein X is selected from the class consisting of bromine, and fluorine; and R is selected from the class consisting of hydrogen and methyl.

3,857,888
HALO/NITRO-SUBSTITUTED BENZALDEHYDE BIS(DIALKYLAMINOALKYL) MERCAPTALS AND CONGENERS

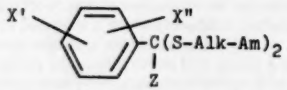
Eunice M. Kreider, Chicago, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 832,469, June 11, 1969, abandoned. This application Feb. 15, 1972, Ser. No. 226,525

Int. Cl. C07c *91/00*

U.S. Cl. 260—570.5 S **13 Claims**

1. A compound of the formula



wherein Z represents hydrogen or methyl; X′ represents halogen or nitro; X″ represents hydrogen, halogen, or nitro; Alk represents alkylene containing more than 1 and fewer than 5 carbons; and Am represents di(lower alkyl)amino.

3,857,889
ISOLATION PROCESS

Thomas Leigh, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 26, 1969, Ser. No. 827,966

Claims priority, application Great Britain, Aug. 6, 1968, 37523/68

Int. Cl. C07c *93/06*

U.S. Cl. 260—570.7 **4 Claims**

1. A process for the isolation of (+)-propanolol from a partially resolved mixture of the enantiomers of propranolol in which (+)-propranolol is present in excess, which comprises the interaction of the said partially resolved mixture with a non-polar solvent in the presence of a solubilising agent selected from primary aralkyl or aliphatic amines, or aliphatic alcohols, and then recovering the (+)-propranolol from the solution so obtained.

3,857,890
PROCESS FOR PREPARING METHYLENE-DI-ANILINES

Francesco P. Recchia, New Haven, and Henri Ulrich, North Branford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed July 25, 1969, Ser. No. 845,027

Int. Cl. C07c *85/08*

U.S. Cl. 260—570 D **11 Claims**

1. A process for the preparation of a mixture of methylene-bridged polyphenyl polyamines wherein the major component is di(aminophenyl)methane wherein the proportion of o,p′-isomer to p,p′-isomer in the latter is within the range of 20:80 to 30:70, said process comprising:

heating in the absence of acid at a temperature within the range of about 150°C to about 300°C a mixture of (i) an aromatic primary amine and (ii) an acid-free mixture of aminobenzylamines obtained by condensing aniline with formaldehyde in the presence of mineral acid and neutralizing the reaction product.

3,857,891
NEW AMINOALKANOL COMPOUNDS AND METHODS FOR THEIR PRODUCTION

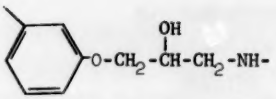
Ann Holmes, and Robert F. Meyer, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

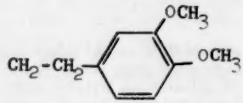
Filed Dec. 14, 1971, Ser. No. 207,954

Int. Cl. C07c *93/06*

U.S. Cl. 260—570.7 **3 Claims**

1. A member of the class consisting of compounds of the formula





and acid-addition salts thereof.

3,857,892
PROCESS FOR THE PREPARATION OF 2,5,6-TRI-LOWER-ALKYL-2-CYCLOHEXENONES

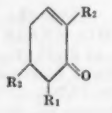
Pius Anton Wehrli, Verona, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 805,365, March 7, 1969, Pat. No. 3,692,839. This application June 2, 1972, Ser. No. 260,024

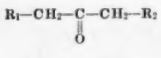
Int. Cl. C07c *45/00*

U.S. Cl. 260—586 R **3 Claims**

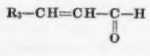
1. A process of producing a keto compound of the formula:



wherein R_1, R_2, and R_3 are lower alkyl comprising the condensing of the keto compound of the formula



wherein R_1 and R_2 are as above with an aldehyde compound of the formula



wherein R_3 is as above in the presence of a base selected from the group consisting of alkali metal hydrides, alkali metal hydroxides and alkali metal lower alkoxides.

3,857,893
PRODUCTION OF DIETHYL KETONE

Kenzie Nozaki, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,998

Int. Cl. C07c *45/08*

U.S. Cl. 260—597 A **7 Claims**

1. A liquid phase process of producing predominantly diethyl ketone by reacting ethylene, carbon monoxide and hydrogen in the presence of a catalytic amount of a cobalt carbonyl catalyst containing only cobalt and carbon monoxide and from about 0.3 to about 1.5 moles of an amine catalyst promoter selected from the group consisting of ammonia, a primary hydrocarbyl amine, and a tertiary hydrocarbyl amine, said hydrocarbyl containing only aromatic unsaturation and up to 12 carbon atoms, per gram atom of cobalt, at a temperature of from about 50° to about 150°C and a pressure of about 50 to about 150°C and a pressure of about 50 to about 2,000 psig. the molar ratio of ethylene to hydrogen being at least two and the ratio of carbon monoxide to hydrogen being greater than one.

3,857,894
HYDROGENATION OF CYCLIC HYDROCARBON DIOLEFINS TO CYCLIC HYDROCARBON OLEFINS

Morello Morelli, San Donato Milanese, and Fortunato De Marco, Milan, both of Italy, assignors to Snamprogetti, S.p.A., San Donato Milanese, Italy

Filed July 24, 1973, Ser. No. 382,055
Claims priority, application Italy, July 27, 1972, 27492/72
Int. Cl. C07c *5/04*
U.S. Cl. 260—666 A **6 Claims**

1. A process of hydrogenating a cyclic hydrocarbon diolefin by contacting said cyclic diolefin with hydrogen in the presence of a palladium base catalyst, wherein the improvement comprises increasing the selectivity of the hydrogenation of said cyclic hydrocarbon diolefin to cyclic hydrocarbon olefin by adding to the hydrogenation mixture an aqueous solution of a zinc salt having a ratio of water/zinc of at least 1/1 by weight.

3,857,895
RECOVERY OF CATALYST COMPLEXES

Frank B. Booth, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 12, 1969, Ser. No. 823,995
Int. Cl. C07c *45/08*
U.S. Cl. 260—604 HF **13 Claims**

1. The hydroformylation of olefins which comprises contacting under liquid phase conditions a hydrocarbon olefin having the following structure:

$R_2R_1C{=}CR_3R_4$

wherein:

R_1, R_2, R_3 and R_4 are hydrogen, alkyl of 1 to 17 carbons; cycloalkyl of 5 to 10 carbons; or aryl of 6 to 10 carbons; or wherein one of said R_1 and R_2 together with one of said R_3 and R_4 form a single alkylene of 2 to about 8 carbons; with carbon monoxide and hydrogen in the presence of a catalyst comprising a complex of a Group VIII metal with a biphyllic ligand of the following structure:

ER_3

wherein:

E is trivalent arsenic, antimony or phosphorus;

R is the same or different alkyl or 1 to 10 carbons; cycloalkyl of 5 to 10 carbons or aryl of 6 to 10 carbons, and at least one of said R groups is aminoalkyl or amidinoalkyl of 1 to 10 carbons or aminoaryl or amidinoaryl of 6 to 10 carbons;

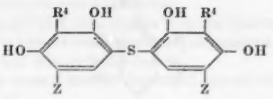
at a temperature from about 20° to 300°C. and a pressure from 1 to 10,000 atmospheres and for a sufficient time to form a crude reaction product containing a hydroformylated product having one more carbon than said olefin; removing a liquid effluent containing said crude product and catalyst complex from said contacting, distilling said effluent to recover said hydroformylated product from a residue containing said catalyst complex, and recovering said catalyst complex therefrom by contacting at least a portion of said residue with an aqueous acid selected from the class consisting of hydrohalic, sulfuric, nitric, phosphoric and C_1 to C_9 alkane and aryl sulfonic acids having a sufficient concentration to effect decoloring of a toluene solution of said metal complex and separating said aqueous acid from said portion of said residue.

3,857,896
SUBSTITUTED DIRESORCYL SULFIDE AND SULFOXIDE COMPOUNDS

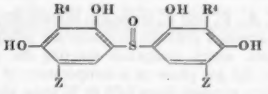
Robert C. Desjarlais, 8 Karen Dr., South Hadley Falls, Mass. 01035

Continuation of Ser. No. 156,079, June 23, 1971, abandoned, which is a division of Ser. No. 667,365, Sept. 13, 1967, Pat. No. 3,619,191. This application Dec. 15, 1972, Ser. No. 315,717
Int. Cl. C07c *149/36, 147/14*
U.S. Cl. 260—609 F **2 Claims**

1. A compound having a general formula selected from the class consisting of



and



wherein R^4 is an alkyl group containing from 1 to about 6 carbon atoms and Z is a halogen atom.

3,857,897
PROCESS FOR THE PRODUCTION OF ORTHOCARBONIC ACID ESTERS

Kurt Findeisen, and Kuno Wagner, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 17, 1972, Ser. No. 272,224
Claims priority, application Germany, Aug. 3, 1971, 2138727
Int. Cl. C07c *41/00*
U.S. Cl. 260—613 R **6 Claims**

1. Process for preparing orthocarbonic acid esters which comprises reacting trichloromethyl isocyanide dichloride with a monofunctional aromatic hydroxy compound having the formula:

Ar — OH

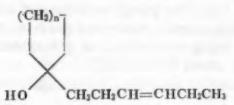
wherein Ar is selected from the group consisting of phenyl, naphthyl and the foregoing substituted with a substituent selected from the group consisting of alkoxy, phenyl, phenoxy, phenylthio, halogen, lower haloalkyl, nitro, —CN, lower carbalkoxy, alkylsulphonyl, phenylsulphonyl, methyl, ethyl, isopropyl, butyl, tert.butyl, octyl, cyclohexyl, cyclopentyl, methylcyclohexyl and ethylcyclopentyl at a temperature in the range of from 0°C to 250°C.

3,857,898
1-(3'-HEXENYL)-1-CYCLOALKANOLS

Alfred A. Schleppnik, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1971, Ser. No. 212,780
Int. Cl. C07c *35/06, 35/08, 35/20*
U.S. Cl. 260—617 R **4 Claims**

1. A compound characterized by the structural formula



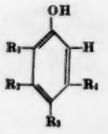
wherein *n* is an integer of from 1 to 3.

3,857,899
PROCESS FOR SELECTIVE METHYLATION OF PHENOLS

Akira Tasaka, Ibaragi-shi; Akira Morii, Takatsuki-shi, and Yousuke Matoba, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Sept. 29, 1969, Ser. No. 861,989
Claims priority, application Japan, Oct. 5, 1968, 43-72729; Oct. 7, 1968, 43-73024; Oct. 31, 1968, 43-79810
Int. Cl. C07c *37/16*
U.S. Cl. 260—621 R **21 Claims**

1. A process of methylation the the ortho-position of a phenol represented by the formula



wherein R_1, R_2, R_3 and R_4 represent individually a hydrogen atom or a saturated aliphatic hydrocarbon group having 1–6 carbon atoms, which comprises reacting the phenol with methanol in the gas phase at a temperature of from 300°to 600°C. under a pressure from 0.05 to 20 atms. absolute, in the presence of a catalyst selected from the group consisting of (1) a mixed oxide produced by calcination comprising (a) cerium oxide or a mixed oxide of rare earth elements containing at least 30 percent by weight of cerium oxide in combination with (b) at least one oxide selected from the group consisting of titanium oxide, tin oxide, antimony oxide and bismuth oxide with the weight ratio of 1:0.01–1.0; (2) a mixed oxide produced by calcination comprising said (a) and magnesium oxide with the weight ratio of 1:0.1–5.0 and (3) a mixed oxide produced by calcination comprising (a), (b) and (c) magnesium oxide, the weight ratio of components (a) to (b) to (c) being 1:0.01–1.0:0.1–5.0.

3,857,900

HYDROGENATION OF ALDEHYDES USING TRIARYLPHOSPHINE RHODIUM HALOGENOID CATALYSTS

Geoffrey Wilkinson, London, England, assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 821,521, Dec. 10, 1968, , which is a division of Ser. No. 514,118, Dec. 15, 1965, abandoned. This application Apr. 26, 1971, Ser. No. 137,646

Int. Cl. C07c *29/14*

U.S. Cl. 260—638 B **7 Claims**

1. A hydrogenation process for converting aldehyde to the corresponding alcohol which consists essentially of reacting hydrogen in the absence of carbon monoxide with an aldehyde having the formula R-CHO wherein R is a saturated, straight chain, hydrocarbon radical of from 1 to about 24 carbon atoms, in a liquid reaction medium having dissolved therein a catalytic amount of a catalyst wherein said catalyst is a compound having the formula:

$$L_nM^vX_y$$

wherein L is a triarylphosphine ligand wherein each aryl group has 6 to about 10 carbon atoms and is solely composed of carbon and hydrogen, n is the number of ligand molecules present and is a positive integer from 1–3, M is rhodium, *v* is the valence of said rhodium and is a positive integer from 1–3, X is selected from the group consisting of halogen, cyanide, cyanate and thiocyanate, and *y* is a positive integer from 1–3, said process being carried out at a temperature within the range of from about 90° to 120°C.

3,857,901

TREATING HYDROCARBONS

Dennis Albert Dowden; Ian Robertson Shannon, and Michael Staines Spencer, all of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 21, 1972, Ser. No. 245,882

Claims priority, application Great Britain, Apr. 27, 1971, 11548/71

Int. Cl. C07c *5/24, 3/58*

U.S. Cl. 260—668 A **20 Claims**

1. A process of isomerizing an alkyl aromatic hydrocarbon which comprises contacting the hydrocarbon with a catalyst comprising a crystalline solid solution of at least two irreducible oxides of at least two lattice cation-forming elements of differing valency between 2 and 6 inclusive, the higher-valency element being present in the solution in excess by atoms, so that the crystal lattice of the oxide of the higher-valency element is made defective by the presence of the oxide of the lower-valency element, and the percentage by metal atoms of the lower-valency element in the solution is at least 0.05%.

3,857,902

PURIFICATION OF TURPENTINE BY A PROCESS FOR THE RECOVERY OF ONE OR MORE DISSOLVED PRODUCTS FROM COMPLEX LIQUID MIXTURES

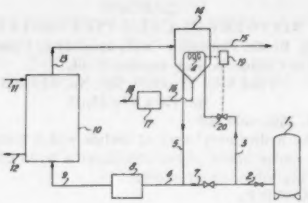
Mamoru Inomata, and Kazuo Hanabusa, both of Kobe, Japan, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Dec. 8, 1972, Ser. No. 313,395

Claims priority, application Japan, Dec. 31, 1971, 46-06784

Int. Cl. C07c *13/00, 27/02*

U.S. Cl. 260—675.5 **8 Claims**



1. In a physical process for removing a soluble constituent from a liquid feed stock by selective volatilization and entrainment of said constituent in a stripping gas, which process comprises:

a. providing a complex liquid mixture as said liquid feed stock, said complex liquid mixture comprising at least a major constituent and a minor constituent in lesser amount than said major constituent, said minor constituent being dissolved in said complex liquid mixture, and having a boiling point substantially lower than the boiling point of said major constituent, and substantially higher than the boiling point of nitrogen;

b. providing gaseous nitrogen as said stripping gas, said nitrogen being inert with respect to at least said major constituent; and

c. directly contacting at ambient temperature said liquid feed stock with said stripping gas, and obtaining thereby a waste stripping gas having selectively volatilized and entrained at least a part of said dissolved minor constituent, and a stripped liquid feed stock from which said minor constituent has been at least partly selectively removed,

the improvement comprising:

d. providing a source of liquid nitrogen;

e. at least partially vaporizing a stream of said liquid nitrogen, in indirect heat exchange with said waste stripping gas containing at least a part of said minor constituent;

f. using the vaporized part of said stream of liquid nitrogen, obtained during step (e), reheated to ambient temperature, as at least a part of said stripping gas involved in steps (b) and (c);

g. condensing said part of said minor constituent contained in said waste strippng gas, in indirect heat exchange with said stream of liquid nitrogen in the course of the partial vaporization of step (e); and

h. separating said condensed part of said minor constituent, obtained during step (g), from said waste stripping gas denuded from said selectively entrained and volatilized minor constituent.

3,857,903

CONTINUOUS PROCESS FOR THE PREPARATION OF 2,5-DIMETHYL-2,4-HEXADIENE

Hugh John Hagemeyer, Jr., and Howard Nolan Wright, Jr., both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,744
Int. Cl. C07c *1/20*
U.S. Cl. 260—681 **11 Claims**

1. A process for the production of 2,5-dimethyl-2,4-hexadiene by the acid catalyzed cleavage and isomerization of 2,2,4-trimethyl-3-pentenyl isobutyrate and/or 2,2,4-trimethyl-4-pentenyl isobutyrate by contacting an acid catalyst at a temperature in the range of about 125°C. to about 250°C. with said carboxylic acid ester, the improvement which comprises the steps of:

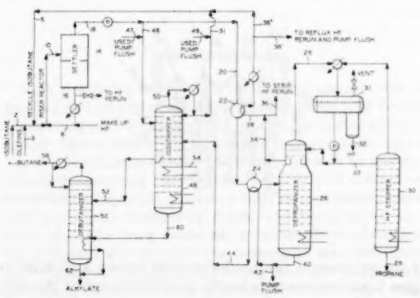
1. continuously feeding said carboxylic acid ester and said acid catalyst into the base of a reactor;
2. continuously removing from the reactor a first overhead stream comprising 2,5-dimethyl-2,4-hexadiene and isobutyric acid;
3. continuously feeding said first overhead stream into a first distillation column operated at a pressure of less than one atmosphere, and removing therefrom a second overhead stream comprising 2,5-dimethyl-2,4-hexadiene and a first bottoms stream comprising isobutyric acid;
4. feeding said second overhead stream into a second distillation column, which column is operated at a pressure higher than that of the first distillation column and removing therefrom a third overhead stream consisting of low boiling impurities, and a second bottoms stream comprising impure 2,5-dimethyl-2,4-hexadiene; and
5. feeding said second bottoms stream into a third distillation column, which column is operated at a pressure higher than that of the first distillation column and removing from said third distillation column a stream of essentially pure 2,5-dimethyl-2,4-hexadiene from a vapor take-off line located near the bottom of said third distillation column.

3,857,904

HF ALKYLATION SYSTEM UTILIZING ALKYLATE STREAM REBOIL

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 7, 1973, Ser. No. 357,615
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.48 **2 Claims**



1. In an HF-alkylation process wherein isoparaffin, olefin and hydrofluoric acid catalysts are reacted in a reaction zone to form an alkylate, wherein the alkylate-containing hydrocarbon is passed into a first fractionation zone to remove unreacted isoparaffin, wherein a side draw stream is separated from said first fractionation zone and wherein said side draw stream is passed into a second fractionation zone, the improvement which comprises

separating said side draw stream from the first fractionation zone as a liquid stream consisting substantially of normal butane and heavier hydrocarbon,

separating normal butane from said second fractionation zone, and

passing the alkylate-containing bottoms from said first fractionation zone into the bottom portion of said second fractionation zone as reboil for said second fractionation zone.

3,857,905

POWDERED COATING COMPOSITION OF UNSATURATED AYCIDYL POLYMER CONTAINING A SULFUR TERMINATING GROUP, DICARBOXYLIC ACID, POLESTER AND POLYACRYLATE

William D. Blackley, Afton Township, Washington County; Richard B. Castle, Woodbury, and Leslie G. Berntson, Richfield, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 2, 1973, Ser. No. 329,090
Int. Cl. C08g *30/12*, *45/04*
U.S. Cl. 260—835 **4 Claims**

1. A thermosetting coating powder comprising

1. 100 parts of a solid, low molecular weight, substantially linear, storable epoxy-functional acrylic terpolymer of 5–20 parts of glycidyl methacrylate units, 5–35 parts of lower alkyl acrylate units in which the alkyl group contains from two to four carbon atoms, 50–70 parts of methyl methacrylate units, and 0.5–10 parts of chain terminating groups selected from

$$\mathrm{ROCCH_2S-} \quad \text{and} \quad \mathrm{R'CH_2OC-S-}$$

wherein R is an alkyl group containing not more than 20 carbon atoms and R′ is hydrogen or an alkyl group bonded to the CH_2 group in the formula through a tertiary carbon atom, R′ containing not more than 19 carbon atoms, said terpolymer having

a. a glass transition temperature of from 20° to 70° C.
b. a Durrans melting point of from 90° to 170° c.
c. a melt index of from 1 to 30, at a temperature of 152° C. with a piston loading of 1,200 grams and an extrusion orifice of 0.0456 inches, and
d. an epoxy equivalent weight of 700–3,000 grams per epoxy group

2. 5–20 parts of a crosslinking agent selected from saturated aliphatic dicarboxylic acids having from 5 to 20 carbon atoms which is essentially unreactive at room temperature but which reacts rapidly above 150° C.
3. 5–40 parts of an acid-terminated linear polyester plasticizer-curative having an equivalent weight per carboxyl group of from 100 to 1,500 and
4. 0.1 to 5 parts of a non-ionic aliphatic polyacrylate surface active agent,

provided that the ratio of total carboxyl equivalence of (2) plus (3) is 0.5–1.5:1 of the epoxy equivalence of (1).

3,857,906

FIRE RETARDANT THERMOPLASTIC POLYMER COMPOSITIONS

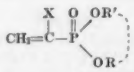
Paul Kraft, Spring Valley, and Siegfried Altscher, Monsey, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 49,204, June 23, 1970, Pat. No. 3,725,509. This application Feb. 20, 1973, Ser. No. 333,595
Int. Cl. C08f *29/12*, *33/08*
U.S. Cl. 260—876 R **10 Claims**

1. A fire retardant, thermoplastic polymer composition comprising an intimate admixture of a thermoplastic polymer selected from the group consisting of polystyrene, copolymers

of styrene or of alpha-methyl styrene with a minor proportion of at least one ethylenically unsaturated monomer selected from the group consisting of the nitriles of ethylenically unsaturated carboxylic acids, the $C_1 - C_{12}$ alkyl esters of acrylic and methacrylic acid and graft copolymers of styrene or alpha-methyl styrene with polybutadiene, and acrylate styrene-acrylonitrile resins and an effective concentration of a copolymer of:

1. from about 2.5 to 99%, by weight of at least one bis (hydrocarbyl) vinylphosphate having the structure



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, C_1–C_{18} alkyl and

wherein R and R′ are hydrocarbyl and substituted hydrocarbyl groups which can be the same, different or conjoint; and

2. the balance of the copolymer comprising at least one halogen-containing ethylenically unsaturated monomer selected from the group consisting of the vinyl halides, the halogenated C_1–C_{12} alkyl acrylates and methacrylates, the vinylidene halides, the halosubstituted nitriles of ethylenically unsaturated carboxylic acids, and the chlorinated styrenes.

3,857,907

PROCESS FOR THE MANUFACTURE OF PHOSPHORIC ACID ESTERS AND PHOSPHONIC ACID ESTERS

Henry Martin, and Jozef Drabek, both of Basel, Switzerland

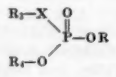
Filed Apr. 1, 1970, Ser. No. 24,853

Claims priority, application Switzerland, Apr. 2, 1969, 5106/69

Int. Cl. C07f 9/08, 9/16, 9/40

U.S. Cl. 260—982 **6 Claims**

1. A process for preparing phosphoric acid esters of the formula



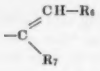
wherein

each of R_3 and R_4 represents C_1–C_4 alkyl,

X represents oxygen or the direct P—R_3 bond, and

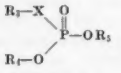
R represents phenyl or phenyl substituted by a radical selected from the group consisting of alkyl, halogen, nitro, cyano, alkylmercapto, trifluoromethyl and ureido substituted by alkyl, alkoxy or halophenyl; the residue of the formula

in which R_1 represents C_1–C_4 alkyl, phenyl or phenyl substituted by halogen or nitro, and R_2 represents hydrogen, phenyl, alkylamino, dialkylamino or cyano; a heterocyclic residue containing 5 or 6 ring members and having optionally one or two benzene rings fused thereon, which residue may be substituted by alkyl or halogen; or the radical of an enolised aliphatic keto compound of the formula



wherein one of R_6 and R_7 represents alkyl, carbalkoxy or carboxamide and the other represents carbalkoxy or carboxamide,

which process comprises reacting (1) a phosphorus compound of the formula



wherein R_5 represents C_1–C_4 alkyl, with (2) trichlorobromomethane and (3) a compound of the formula

R — OH.

3,857,908

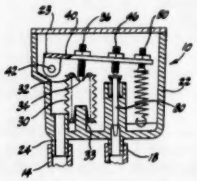
APPARATUS FOR CONTROLLING AND MODULATING ENGINE FUNCTIONS

Morris C. Brown, Florissant; Forrest W. Cook, both of Webster Groves, Mo.; Ralph E. Kalert, Granite City, Ill.; Arthur C. Vollmer, St. Charles, and Jerry H. Winkley, St. Louis, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,262

Int. Cl. F02m 1/14

U.S. Cl. 261—39 A **4 Claims**



1. In an internal combustion engine having a plurality of engine functions operable by the suction created by the natural aspiration of said engine during running condition, the improvement comprising;

an attachment connected to said engine communicating on one side with ambient air and on another side with at least one suction controlled passage leading to at least one engine function controlling means.

said attachment including a bellows responsive to barometric and/or temperature changes of said atmospheric air to change a dimension of said bellows,

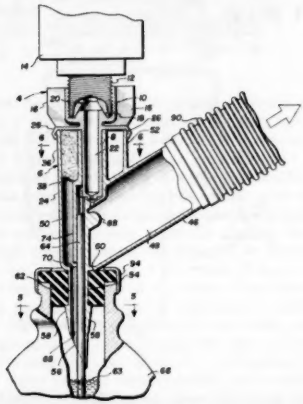
said bellows being mounted in a housing, said housing also including a pivotable plate surmounting said bellows, at least one metering means being connected to said plate, said metering means being adapted to meter ambient air to said at least one engine function controlling means and said pivotable plate being pivoted at one end thereof, said plate adjustably contacting said bellows at an intermediate position along the length of said plate, said plate also having adjustment biasing means at the end opposite said pivoted end.

3,857,909

GAS NEBULIZING APPARATUS

James A. Huggins, c/o James A. Huggins & Associates, 551 W. Park Ave., Libertyville, Ill. 60048

Filed Apr. 11, 1973, Ser. No. 350,026
Int. Cl. B01f *3/04*; **A61m** *15/00*
U.S. Cl. 261—64 R **8 Claims**



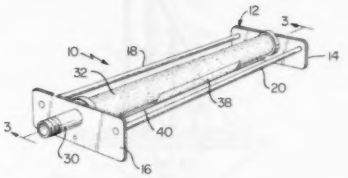
6. A connector for use in a system that supplies nebulized gas to a patient and which includes a container with liquid and an opening with a closure therein, said connector comprising a body having means for connection to a gas supply and having nozzle means, a tubular spike member with an end having means for piercing the closure to insert said tubular spike member through said closure, a tube in communication with said gas supply connecting means and being joined to said body, said tube being within and extending beyond said end of the tubular spike member for immersion into the liquid to carry liquid therefrom to said nozzle means, means forming a nebulizing chamber within said body for receiving a mixture of the gas and liquid, adjustable air valve means to add additional air to said chamber, and drain means to carry rainout liquid from said nebulizing chamber back into said container; said adjustable air valve means comprising a flange on said gas supply connection means, said flange having openings over a portion of its area and being imperforate over another portion of its area, said flange having means for rotatably suspending said body at an open end thereof that communicates with said chamber.

3,857,910

OXYGENATOR SUPPORT

Lois I. Day, 2280 Whispering Willow Cir., Kettering, Ohio 45440

Filed Dec. 7, 1972, Ser. No. 313,095
Int. Cl. B01f *3/04*; **C02c** *5/04*
U.S. Cl. 261—65 **5 Claims**



1. An oxygenator support connectable to an air supply to provide a high density of air bubbles comprising:
a pair of end supports;
a flexible cylindrical porous film having a high density of pores extending therethrough mounted in suspended fashion at each end to each respective end support and extending therebetween;
means on one semi-cylindrical portion of said cylindrical film to effectively seal the pores therealong wherein only the pores in the other semi-cylindrical portion of said cylindrical film are unsealed;
inlet means through one of said end supports to provide communication between a source of air and the interior of said cylindrical film, wherein air bubbles are formed as the air passes outwardly through the unsealed portion of said cylindrical film, said unsealed portion being the upper portion when said cylindrical film is in a horizontal position as the air pressure within the cylindrical film builds up and escapes therethrough;
means axially spacing said end supports apart so as to keep said film substantially tight; and
a rod extending between said end supports and cooperating with said cylindrical film to maintain said cylindrical film in a substantially horizontal position during air flow therethrough.

3,857,911

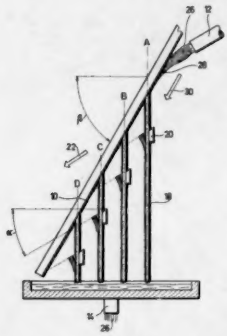
APPARATUS FOR HEAT- AND MASS TRANSFER BETWEEN LIQUIDS AND GASES

Laszlo Szucs; Csaba Tasnadi, and Istvan Lindner, all of Budapest, Hungary, assignors to Energiagazdalkodasi Intezet, Budapest, Hungary

Filed Jan. 23, 1974, Ser. No. 435,984
Int. Cl. F28c *1/04*
U.S. Cl. 261—112 **3 Claims**

1. In an apparatus for heat- and mass transfer between liquids and gases comprising, in combination, a liquid distributor surface inclined between a liquid inlet and a liquid outlet, said liquid distributor surface facing said liquid outlet, liquid withdrawing means provided in several rows one behind the other which lead from said liquid distributor surface into said liquid outlet, baffle means provided on said liquid withdrawing means and exposing the sides of the latter facing the liquid inlet, said baffle means having front surfaces facing the and inclining in the same direction as the liquid distributor surface, the angle of inclination of the front surfaces of the baffle means being smaller than the angle of inclination of the liquid

distributor surface so that extensions of said front surfaces intersect said liquid distributor surface for reuniting surplus



liquid from said baffle means to a main liquid film formed on said liquid distributor surface.

3,857,912

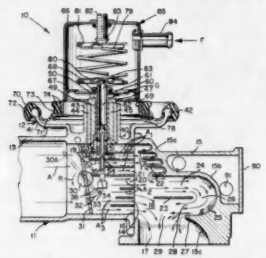
VEHICLE FUEL INJECTOR AND CARBURETOR UNIT

Oscar R. Cedarholm, 3011 Cedar Ln., Eureka, Calif. 95501

Continuation-in-part of Ser. No. 216,361, Jan. 10, 1972, Pat. No. 3,814,391. This application July 15, 1974, Ser. No. 488,481

Int. Cl. F02m *29/04*

U.S. Cl. 261—144 **9 Claims**



1. A vehicle fuel injector and carburetor unit for atomizing fuel, comprising:

a. an atomization housing having a back wall and defining a mixing chamber for accepting and mixing charges of air and fuel;

b. an air inlet structure having an air inlet in communication with the mixing chamber, the mixing chamber and air inlet defining a generally continuous flow passageway;

c. a throttle valve positioned in the continuous flow passageway to regulate the flow of air into the mixing chamber;

d. a fuel injector coupled to the atomization housing;

e. a metering valve connected to the fuel injector and projecting into the continuous flow passageway;

f. vertically spaced guide plates coupled to the housing and extending horizontally across the continuous flow passageway, the guide plates being arranged adjacent the metering valve to split incoming air into separate streams of air;

g. spaced fins coupled to an upper section of the housing back wall at a location downstream of the guide plates, the fins being arranged to define plural pockets that project inwardly towards the guide plates — wherein, the fins serve to break up and atomize the fuel while the pockets temporarily hold fuel for being successively blasted and further atomized by the streams of air issuing from between the guide plates;

h. a divider coupled to the housing;

i. a U-shaped channel defined by the divider and a middle section of the housing back wall;

j. means defining a contraflow collision zone generally beneath the divider where at least a stream of air from between the guide plates encounters the air-fuel flow issuing generally in the opposite direction from the U-shaped channel; and,

k. a flow outlet opening defined by the housing and located downstream of the contraflow collision zone,

wherein, the combined effects and coaction of the guide plates, the fins and pockets, divider, and U-shaped channel aid in atomizing fuel to improve combustion.

3,857,913

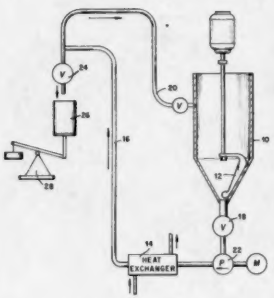
METHOD FOR THE MANUFACTURE OF CARBON FOAM

William T. Crow, Pittsburgh, Pa.; Arthur E. Sands, Oak Ridge, and Michael E. Scrivner, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Continuation of Ser. No. 868,138, Oct. 21, 1969, abandoned. This application Oct. 13, 1972, Ser. No. 298,717

Int. Cl. C01b *31/00*

U.S. Cl. 264—29 **3 Claims**



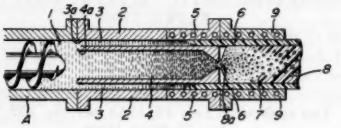
1. In the art of preparing a cellular carbonaceous product comprising the steps of admixing partially polymerized furfuryl alcohol containing less than 12 mole per cent of the alcohol monomer and possessing a viscosity in the range of about 10,000 to 14,000 centipoise with water and urethane compounds capable of interacting to form a cellular urethane structure and consisting essentially of a polyhydric alcohol and diisocyanate, forming a cellular urethane structure by the interaction of the urethane compounds, heating the cellular urethane structure to a temperature below the decomposition temperature of the urethane and sufficient to cure the furfuryl alcohol, and thereafter heating the cellular structure to a temperature greater than the decomposition temperature of the urethane and sufficient to carbonize the furfuryl alcohol for forming the cellular carbonaceous product; the improvement consisting of forming a homogeneous premix of the partially polymerized furfuryl alcohol, water and polyhydric alcohol by the steps of combining the partially polymerized furfuryl alcohol, water and polyhydric alcohol, agitating the combined ingredients for homogeneously mixing the latter while simultaneously shearing the partially polymerized furfuryl alcohol for reducing the viscosity of the partially polymerized furfuryl alcohol to a viscosity in the range of 4,000 to 6,000 centipoise and for heating the mixture to a temperature of at least about 35°C. to inhibit coagulation in the premix due to a reaction between the water and the polyhydric alcohol, continuing said agitation and said shearing to maintain the

partially polymerized furfuryl alcohol at a viscosity in the last mentioned range and to continually add heat to the premix, circulating premix in a heat exchange relationship with a coolant for maintaining the premix at said temperature of at least about 35°C., removing a portion of the homogeneous premix, and adding the diisocyanate to said portion for forming said cellular urethane structure by the interaction of the urethane compounds.

3,857,914
METHOD FOR EXTRUDING A FOAMED, MOLDED ARTICLE

Itsuho Aishima, Tokyo; Hisaya Sakura, and Hiroshi Shimizu, both of Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 867,687, Oct. 20, 1969, abandoned. This application May 1, 1972, Ser. No. 249,715
Claims priority, application Japan, Oct. 21, 1968, 43-76068
Int. Cl. B29d *23/04, 27/00*
U.S. Cl. 264—45.5 **9 Claims**



1. A method for continuously extruding a foamed, molded article having a skin-core structure having a skin layer and a foam core, said skin layer having a thickness between 0.5 and 5 mm and a degree of expansion no greater than 1.2, said method comprising introducing a flowable, expandable, thermoplastic resin from a single source into a single extruding die having a plurality of partitioned passages for respectively forming skin and core layers, externally cooling the resin passing through at least one of the passages for forming the skin layer at least in the region of the outlet of the extruding due, the skin layer being cooled to a temperature lower than the softening point of the resin to substantially solidify the resin in the substantially unexpanded state while simultaneously maintaining the resin passing through at least one passage for forming the core layer in a substantially unexpanded state under pressure without cooling and extruding all of the resin from the extruding die into a lower pressure zone in which the resin from the passage for forming the core layer is immediately expanded to become integrated with the solidified resin which forms the skin layer.

3,857,915
EMBOSSED PLASTIC SURFACE COVERING AND METHOD OF PREPARING SAME

Richard P. Crowley, 125 High St., Boston, Mass. 02110

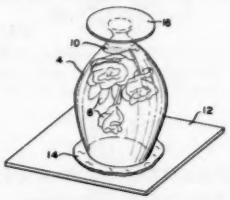
Continuation of Ser. No. 28,052, April 13, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 228,396The portion of the term of this patent subsequent to July 1, 1986, has been disclaimed.
Int. Cl. B29d *7/20;* **B29h** *21/02*
U.S. Cl. 264—52 **7 Claims**

1. A method of chemically embossing a gas-expandable vinyl-chloride resin sheet material, which method comprises:
a. applying to surface portions of said sheet material in a predetermined pattern an ester of acrylic acid and a perioxide cross linking agent which will cross-link said ester on heating; and
b. heating the treated sheet material to a temperature sufficient to polymerize the ester by the cross-linking agent and to cause the sheet to expand, whereby the surface of the portion of the sheet material to which the unsaturated compound has not been applied rises above the level of the surface of the applied portions to form a chemically embossed product.

3,857,916
METHOD OF SEALING AN OPEN TOPPED VESSEL

John C. Waszkiewicz, Jr., Middle Settlement Rd., New Hartford, N.Y. 13413

Filed June 22, 1970, Ser. No. 48,196
Int. Cl. B29c *17/08, 13/02*
U.S. Cl. 264—85 **6 Claims**



1. In a method of sealing an open topped vessel, the steps of:
a. mixing together liquid epoxy resin, a liquid amine curing agent and a liquid plasticizer, the resin comprising at least 70% by weight of the mixture;
b. pouring the mixture onto a glass plate having a surface covering of mold release so that the mixture forms a puddle thereon;
c. placing the vessel to be sealed upside down on the glass plate with the edge of its open top in the mixture puddle;
d. leaving the vessel as stated above for at least sixteen hours while the mixture cures;
e. removing the vessel and cured mixture, which now forms a top closure for the vessel, from the glass plate; and
f. trimming the excess cured mixture from the edge of the vessel.

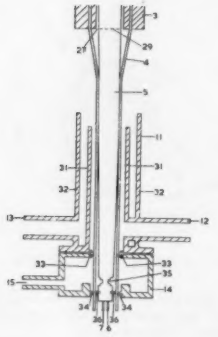
3,857,917
PROCESS FOR THE PRODUCTION OF TUBULAR FILMS FROM THERMOPLASTIC MATERIALS

Grahame Melvin Reade, Wheathampstead, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 45,383, June 11, 1970, abandoned. This application July 20, 1972, Ser. No. 273,430
Claims priority, application Great Britain, June 25, 1969, 32068/69
Int. Cl. B29d *23/04*
U.S. Cl. 264—89 **7 Claims**

1. A process for the production of an oriented tubular film comprising downwardly melt extruding a tube of an organic thermoplastic polymeric material having a glass transition temperature of at least 25°C from an extrusion orifice, cooling and sizing the tube by withdrawing the tube over and in contact with a hollow, cooled, matt- surfaced mandrel at a rate of from 1.05 to 10 times greater than the speed of extrusion of the tube so as to stretch the tube up to 10 times in the direction of extrusion, the mandrel having a Centre Line Average surface roughness of between 20 and 90 microinches, being tapered over at least that part of its length which is in contact with the contracting tube to allow for the contraction of the tube as it cools to the solid state, the degree of taper being at least 0.0008 inch per inch of said tapered length, and having a diameter, not greater than 1 inch, which is smaller than that of the extrusion orifice, passing the tube over and in contact with a resilient sealing member in the form of a flat circular disc positioned downstream of the tapered part of the mandrel on a plug sealing the bottom of the mandrel, the position of the sealing member within the tube being such that the tube is sufficiently solidified not to stick when it contacts

the sealing member, cooling the external surface of the tube with a cooling liquid, said cooling liquid contacting the tube at a distance at least equal to the mandrel diameter beyond the point at which the tube first contacts the mandrel, heating the cooled tube to its stretching temperature, introducing gas



under pressure to within the tube at a position downstream of the sealing member, removing, through a vent in said plug and thence through the core of the mandrel, excess of the pressurising gas which passes upstream of the sealing member, and finally collapsing the expanded tube.

3,857,918

METHOD FOR PREPARING BRICK PANELS

Rudolf F. Wyss, Wadenswil, Switzerland, and Dallas G. Grenley, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 182,155, Sept. 20, 1971, abandoned. This application Aug. 16, 1973, Ser. No. 389,040

Int. Cl. B28b *3/00, 23/00*

U.S. Cl. 264—261 **3 Claims**

1. In the method of making building panels consisting of individual bricks held together solely with mortar, such method comprising the steps of arranging a plurality of bricks in a predetermined pattern spaced apart from one another on a substantially horizontal bed, forming a mold for said panels filling the spaces between the bricks with a flowable mortar, allowing the mortar to set to an extent sufficient to retain the bricks in their assembled relation and removing the panel from the mold; the improvement consisting of (1) utilizing as said mortar a vinylidene chloride polymer latex-modified portland cement mortar composition wherein said mortar composition comprises on an absolute volume basis (1) about 100 parts of portland cement, (2) between about 200 and 1,000 parts of a mineral aggregate, (3) between about 30 and 170 parts of water and (4) between about 8 and 170 parts of said vinylidene chloride polymer latex, and wherein said vinylidene chloride polymer is composed of from about 35 to about 90 percent by weight of vinylidene chloride and from about 65 to about 10 percent by weight of at least one other interpolymerizable monomer, as based on polymer solids, said other interpolymerizable monomer being composed of at least one monomer of the general formula

$$CH_2=C(R)-X$$

wherein R is selected from the group consisting of hydrogen and the methyl group and X is selected from the group consisting of —CN, halogen of atomic numbers 9 to 35, and ester forming groups, —COOY, wherein Y is selected from the group consisting of a primary alkyl group and a second alkyl group, each of the foregoing alkyl groups containing from 1 to 18 carbon atoms, and (2) applying pressure substantially uniformly throughout said panels by adjusting the sides of said mold inwardly, said pressure being sufficient to compress said mortar substantially uniformly throughout said panels in an amount between about 1 and 2 millimeters without causing displacement of said mortar from between adjacent brick surfaces said pressure being applied prior to and at least until the occurrence of the initial set of said mortar as determined by standard ASTM test methods C–254 or C–403.

3,857,919

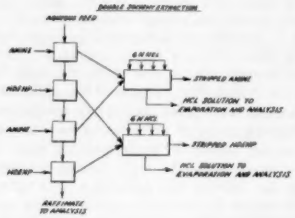
SEPARATING METAL VALUES BY SELECTIVE EXTRACTION

Wayne C. Hazen, Denver, and Pablo Hadzeriga, Arvada, both of Colo., assignors to Molybdenum Corporation of America, New York, N.Y.

Continuation of Ser. No. 657,580, Aug. 1, 1967, abandoned. This application June 18, 1969, Ser. No. 855,792

Int. Cl. B01d *11/04*

U.S. Cl. 423—9 **8 Claims**



1. A process for separating rare earth metal values in an aqueous solution containing said metals which comprises contacting and mixing said aqueous solution with a first immiscible organic solvent which selectively extracts at least a first rare earth metal from the metals in the aqueous solution, allowing the mixture to settle into an aqueous phase depleted in the first rare earth metal and a solvent phase enriched in said first rare earth metal, separating the aqueous phase from the solvent phase and then contacting said separated aqueous phase with a second immiscible organic solvent which selectively extracts at least a second rare earth metal from said aqueous phase, allowing the mixture to settle into an aqueous phase depleted is said second rare earth metal and a solvent phase enriched in said second rare earth metal, separating said aqueous phase and then contacting and mixing said separated aqueous phase with said first organic solvent which selectively extracts an additional amount of said first rare earth metal, allowing the mixture to separate into an aqueous phase depleted in said first rare earth metal and a solvent phase enriched in said first rare earth metal, separately stripping said first and second solvents to recover a first stripping solution concentrated in said first rare earth metal and a second rare earth metal, and separating a last aqueous phase depleted in both of said first and second rare earth metals.

3,857,920
RECOVERY OF LITHIUM CARBONATE

Le Roy F. Grantham, Calabasas, and Samuel J. Yosim, Woodland Hills, both of Calif., assignors to The United States of America as represented by the Secretary of Department of Health, Education and Welfare, Washington, D.C.

Filed July 29, 1971, Ser. No. 167,337
Int. Cl. C01d *11/02, 7/22*
U.S. Cl. 423—208 **3 Claims**

1. A process for recovering lithium carbonate from a filter cake containing alkali metal carbonates in admixture with fly-ash-containing particulate matter, said filter cake being obtained from a closed-cycle process for the removal of sulfur oxides from a fly-ash-containing flue gas, said closed-cycle process including stages of absorption and reduction, and where,

in the absorption stage said flue gas is contacted with a molten salt mixture containing the carbonates of sodium, potassium, and lithium as the active absorbent for said sulfur oxides to convert a portion of the molten absorbent to alkali metal sulfites and sulfates, and where a porous filter cake of fly ash which contains carbonate melt is obtained by filtration of the melt downstream from said absorption stage, and where,

in the reduction stage the converted absorbent in the melt is reduced to alkali metal sulfides by contact with a carbonaceous reducing agent, and where a porous filter cake of the carbonaceous material which contains carbonate melt is obtained by filtration of the melt downstream from said reduction step,

the improvement providing economic recovery from said filter cakes of the carbonate-containing melt therein for reuse in said closed-cycle process which comprises the sequential steps of:

forming an aqueous slurry of the fly ash and carbonaceous filter cakes,

filtering said slurry to remove in said filtrate the dissolved sodium carbonate and potassium carbonate components of the melt and the dissolved water-soluble components of the filter cakes and recover a second filter cake containing the lithium carbonate component of the melt and the water-insoluble components of said fly ash and carbonaceous filter cakes,

forming a second aqueous slurry from said second filter cake,

carbonating said second slurry to convert the insoluble lithium carbonate therein to soluble lithium bicarbonate in aqueous solution,

filtering the solution to recover in the filtrate the dissolved lithium bicarbonate,

decarbonating the lithium bicarbonate solution to precipitate lithium carbonate in the aqueous medium and

filtering said aqueous medium to separately recover the lithium carbonate therefrom for recycle in the process.

3,857,921
METHOD FOR ELIMINATING NITROGEN OXIDES AND CATALYST COMPOSITION FOR USE IN PRACTICING SAID METHOD

Nobuhiro Tamura; Ryoichi Mitsui; Seizaburo Watanabe, and Kazuo Suga, all of Tokyo, Japan, assignors to Asaki Kasei Kogyo Kabushiki Kaisha, Osaka Prefecture, Japan

Filed Sept. 25, 1973, Ser. No. 400,679
Claims priority, application Japan, Sept. 27, 1972, 47-96236; Feb. 26, 1973, 48-22180; Apr. 16, 1973, 48-42196
Int. Cl. B01d *53/34*
U.S. Cl. 423—213.5 **4 Claims**

1. In a method for eliminating toxic substances contained in exhaust gases containing nitrogen oxides, the improvement which comprises contacting an exhaust gas with a catalytic composition deposited on a carrier and comprising:

a. iron, iron oxide or iron sulfide;
b. silver, silver oxide or silver sulfide; and
c. at least one member selected from the group consisting of copper, beryllium, zinc, lead, indium, lanthanum, cerium, and oxides thereof and copper sulfide.

3,857,922
STABILIZATION OF LIGHT METAL HYDRIDE

Norman E. Matzek, 1305 E. Ashman, Midland, Mich. 48645, and Herbert C. Roehrs, Rte. No. 1, Beaverton, Mich. 48562

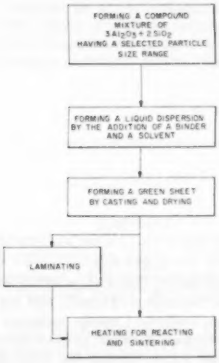
Filed July 13, 1965, Ser. No. 472,403
Int. Cl. C06b *19/00*
U.S. Cl. 423—275 **6 Claims**

1. A crystalline, substantially non-ether solvated aluminum hydride having at least about .01 weight per cent magnesium incorporated into the crystal lattice thereof.

3,857,923
MULLITE PACKAGE FOR INTEGRATED CIRCUIT DEVICES

Richard A. Gardner, Wappingers Falls, N.Y., and David L. Wilcox, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 20, 1972, Ser. No. 264,668
Int. Cl. C01b *33/36*
U.S. Cl. 423—327 **8 Claims**


FORMING A COMPOUND MIXTURE OF $3Al_2O_3 + 2SiO_2$ HAVING A SELECTED PARTICLE SIZE RANGE
FORMING A LIQUID DISPERSION BY THE ADDITION OF A BINDER AND A SOLVENT
FORMING A GREEN SHEET BY CASTING AND DRYING
LAMINATING
HEATING FOR REACTING AND SINTERING

1. A method of fabricating a substantially stoichiometric high density and high purity mullite compound comprising the steps of:

a. forming a particulate mixture of $3Al_2O_3 + 2SiO_2$ by the hydrogen flame pyrolysis of a solution of $6AlCl_3$ and $2SiCl_4$;
b. forming a liquid dispersion of said mixture with a binder and a solvent such that said binder coats the particles of said mixture;
c. removing said solvent from said mixture; and
d. heating said mixture to a temperature above about 900° C so as to remove said binder, react said Al_2O_3 and SiO_2 to form a $3Al_2O_3 \cdot 2SiO_2$ mullite compound, and sinter said compound to remove voids.

3,857,924

PROCESS FOR PREPARING SILICA PARTICLES

Istvan Halasz, Kobenhuttenweg 56, Saarbrucken, and Imrich Sebestian, Fasanenweg 12, Dudweiler, both of Germany

Filed Nov. 2, 1972, Ser. No. 303,288
Claims priority, application Germany, Nov. 5, 1971, 2155045
Int. Cl. C01b 33/12
U.S. Cl. 423—338 5 Claims

1. Process for preparing substantially pure, spherical, porous silica particles having a grain size in the range of 0.001 to 3.0 mm and a metal oxide content of less than 1.0 percent by weight which comprises

a. treating alkali polysilicate solution having a silica content of from 5 to 7.5 percent by weight

i. batchwise by mixing and stirring with a cation exchange material to remove cations and filtering off the cation exchange material; and

ii. thereafter batchwise by mixing and stirring with an anion exchange material to remove mineral acids and filtering off the anion exchange material;

b. emulsifying and coagulating the treated solution from (a) in a water immiscible organic medium thereby forming said silica particles; and

c. recovering said silica particles having a grain size in the range of 0.001 to 3.0 mm and a metal oxide content of less than 1.0 percent by weight.

3,857,925

PREPARATION OF REINFORCING AMORPHOUS SILICA

Aurelio F. Sirianni; Norman A. Funnell, and Ira E. Puddington, all of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed July 11, 1972, Ser. No. 270,636
Claims priority, application Canada, July 27, 1971, 119214
Int. Cl. C01b 33/14, 33/16, 33/18
U.S. Cl. 423—339 15 Claims

1. A process for preparing an amorphous, pulverulent, dry silica, which comprises

a. preparing seed particles by adding a mineral acid to a dilute alkali metal silicate solution containing 1 to 3% by weight of SiO_2 to form a sol having a pH of about 4.5 – 6.5 and allowing the sol to set into a firm aquagel,

b. diluting and dispersing the aquagel in water to form an aqueous dispersion of aquagel seed particles,

c. mixing with said seed dispersion an alkali metal silicate solution,

d. adding acid to said seed dispersion-alkali metal silicate mixture at a temperature of about 75° – 100° C to quickly lower the pH to about 1 to 4 and precipitate silica,

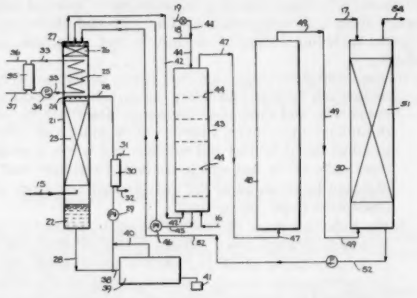
f. separating the wet precipitated silica from the associated liquid and drying the freshly precipitated silica to form an amorphous, pulverulent, dry silica.

3,857,926

PRODUCTION OF NICKEL SULFATE

Heinz Paul Beutner, Englewood, Colo.; Charles Edward O'Neill, Port Credit, Ontario, Canada, and George Feick, Needham, Mass., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 345,180
Int. Cl. C01g 53/10; C01b 21/40
U.S. Cl. 423—544 9 Claims



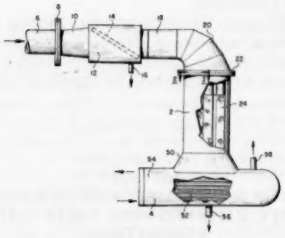
1. A process for producing nickel sulfate comprising reacting nickel carbonyl with nitric acid in the gas phase, absorbing the nickel-containing product of said reaction in an aqueous solution of sulfuric acid and recovering nickel sulfate from said aqueous solution.

3,857,927

SYSTEM AND METHOD INCLUDING A CATALYST BED FOR COMBINING HYDROGEN AND OXYGEN GASES

James O. Henrie, Hidden Holls, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 146,928, May 26, 1972, abandoned.
This application Nov. 30, 1972, Ser. No. 310,747
Int. Cl. C01b 5/00; G21c 1/04; B01j 11/11
U.S. Cl. 423—580 10 Claims



1. A system for recombining hydrogen and oxygen gases comprising:

A. a source of hydrogen and oxygen gases;

B. a catalyst bed having a thickness of less than 0.25 foot and a thickness to frontal area ratio of less than 0.01 ft./ft.², the catalyst being effective to promote the reaction:

$$2H_2+O_2 \quad 2H_2O;$$

and

C. means for flowing said hydrogen and said oxygen gases through said catalyst bed.

3,857,928

PROCESS FOR PRODUCING AMMONIUM METATUNGSTATE FROM AMMONIUM TUNGSTATE BY ION EXCHANGE

Tai K. Kim; John M. Laferty; Martin B. Macinnis; James C. Patton, and L. Rita Quatrini, all of Towanda, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 23, 1974, Ser. No. 435,976
Int. Cl. C01g *41/00*
U.S. Cl. 423—593 **8 Claims**

1. A process for producing crystalline ammonium metatungstate comprising:
1. contacting an aqueous ammonium tungstate solution having a pH of at least 9 with a carboxylic acid cation exchange resin in an amount sufficient to extract ammonium ions from the aqueous solution and to lower the pH thereof to below at least about 4.5 to form at least some metatungstate ions;
2. separating the aqueous solution containing the metatungstate ions from the resin;
3. heating the aqeuous solution containing metatungstate ions at a temperature of at least about 98°C for at least about 5 hours; and
4. crystallizing ammonium metatungstate from the aqueous solution.

3,857,929

PROCESS FOR PRODUCING AMMONIUM METATUNCSTATE FROM AMMONIUM TUNGSTATE BY ION EXCHANGE

L. Rita Quatrini; Tai K. Kim; James C. Patton, and Martin B. Macinnis, all of Towanda, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jan. 23, 1974, Ser. No. 435,977
Int. Cl. C01g *41/00*
U.S. Cl. 423—593 **7 Claims**

1. A process for producing crystalline ammonium metatungstate comprising:
1. contacting an aqueous ammonium tungstate solution having a pH of at least 9 with a sulfonic acid cation exchange resin in an amount sufficient to extract ammonium ions from the aqueous solution and to lower the pH thereof to between about 4.5 and 3.0 to form at least some metatungstate ions;
2. separating the aqueous solution containing the metatungstate ions from the resin;
3. heating the aqueous solution at a temperature of at least about 98°C for at least about 5 hours; and
4. crystallizing ammonium metatungstate from the aqeuous solution.

3,857,930

PREPARATION OF AlH_3 VIA $NaAlH_3$-$AlCl_3$ IN ETHER-TOLUENE

Theodore C. Kraus, Cheshire, and Michael Scardera, Hamden, both of Conn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 24, 1968, Ser. No. 786,780
Int. Cl. C01b *6/00*
U.S. Cl. 423—645 **9 Claims**

1. a process for synthesizing macrocrystalline unsolvated aluminum hydride having a maximum absorption in the infrared at 5.8 microns, said process comprising the steps of:
a. reacting sodium aluminum hydride with aluminum chloride in a diethyl ether -aromatic solvent reaction medium to form aluminum hydride and an alkali metal halide in said reaction medium said aromatic solvent selected from benzene, toluene, and xylene;
b. removing said alkali metal by means of filtration to prevent the premature precipitation of said aluminum hydride formed;
c. heating said aluminum hydride in said reaction medium;
d. distilling said reaction medium until the diethyl ether is substantially removed by means of a distillation process performed at predetermined temperatures and pressures;
e. continuing said heating and said distilling to effect desolvation and crystallization to yield macrocrystalline unsolvated aluminum hydride;
f. separating said aromatic solvent from said macrocrystalline unsolvated aluminum hydride; and,
g. drying said macrocrystalline unsolvated aluminum hydride, said macrocrystalline unsolvated aluminum hydride being characterized by having a maximum absorption in the infrared at 5.8 microns.

3,857,931

LATEX POLYMER REAGENTS FOR DIAGNOSTIC TESTS

Hans Jacob Hager, New York, N.Y., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 111,737, Feb 1, 1971, abandoned. This application Jan. 17, 1972, Ser. No. 218,481
Int. Cl. G01n *31/06, 33/16*
U.S. Cl. 424—12 **6 Claims**

1. A water-insoluble immunological diagnostic reagent having a specific gravity of about that of water comprising discrete particles of a serologically inert latex polymer selected from the group consisting of carboxylated styrene butadiene, carboxylated polystyrene, carboxylated polystyrene with amino groups, acrylic acid polymers, methacrylic acid polymers, acrylonitrile butadiene styrene, polyvinyl acetate acrylate, polyvinyl pyridine and vinyl-chloride acrylate having condensed thereto, with a water soluble carbodiimide coupling agent, through an amide linkage, from about 0.01 to about 15.0% by weight of a known serologically determinant material selected from the group consisting of human chorionic gonadotropin and human gamma globulin.

3,857,932

DRY HYDROPHILIC ACRYLATE OR METHACRYLATE POLYMER PROLONGED RELEASE DRUG IMPLANTS

Thomas H. Shepherd, 12 N. Greenwood Ave., Hopewell, N.J. 08525, and Francis E. Gould, 29 Cedar Ln., Princeton, N.J. 08540

Division of Ser. No. 70,829, Sept. 9, 1970, abandoned, Continuation-in-part of Ser. Nos. 766,840, Oct. 11, 1968, Pat. No. 3,577,512, and Ser. No. 654,044, July 5, 1967, abandoned, and Ser. No. 650,259, June 30, 1967, abandoned, and Ser. No. 567,856, July 26, 1966, Pat. No. 3,520,949. This application June 27, 1972, Ser. No. 266,631
Int. Cl. A61k *27/12*
U.S. Cl. 424—19 **5 Claims**

1. A shaped body in vivo implantation dosage form which is a dry composition containing a therapeutically active material and a water insoluble hydrophilic acrylate or methacrylate polymer selected from the group consisting of polymers of hydroxy lower alkyl acrylates, hydroxy lower alkyl methacrylates, hyroxy lower alkoxy lower alkyl acrylates and hydroxy lower alkoxy lower alkyl methacrylates, said shaped body being formed by casting or molding an anhydrous casting syrup or solution of the therapeutic material and the hydrophilic acrylate or methacrylate and polymerizing the composition, the resulting cast or molded dosage form having the advantage of preventing deterioration or loss or potency and thereby extending the shelf life of the therapeutic.

3,857,933

PROCESS FOR THE MANUFACTURE OF A DRUG DOSAGE FORM PERMITTING CONTROLLED RELEASE OF ACTIVE INGREDIENT

Gerhard Ross, Liederbach/Taunus, and Bernhard Reul, Schneidhain/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 80,981, Oct. 15, 1970, abandoned. This application Feb. 8, 1974, Ser. No. 440,730

Claims priority, application Germany, Oct. 17, 1969, 1952304

Int. Cl. A61k *27/12*

U.S. Cl. 424—20 4 Claims

1. A drug dosage form permitting controlled release of a therapeutically active ingredient therefrom, said dosage form comprises a capsule filled solely with beads of an average diameter from about 0.1 to about 2.5 millimeters, each bead being similar in composition and consisting essentially of

a. from 48.4 percent up to 81.4 percent of a castable carrier, sparingly soluble in the digestive tract, which is a glycol ester of a wax acid containing 22 to 39 carbon atoms;

b. from 13.6 percent up to 30 percent, by total weight of the beads, of said active ingredient present in said carrier in dissolved, dispersed or emulsified form; and

c. from 5 percent to 21.5 percent of a physiologically tolerated surface-active substance present as an oil-in-water emulsifier and having a HLB value of 8 and higher; all said bead components of said capsule having a melting point of at least 45° C.

3,857,934

ACTIVATED POLYMER MATERIALS AND PROCESS FOR MAKING SAME

Bruce S. Bernstein, Somerville, N.J.; Seymour Hyman, New York, N.Y., and Ramesh C. Kapoor, Seaford, Del., assignors to Herculite Protective Fabrics Corporation, New York, N.Y.

Division of Ser. No. 112,053, Feb. 2, 1971, Pat. No. 3,705,938, which is a continuation-in-part of Ser. No. 593,267, Nov. 10, 1966, abandoned. This application May 19, 1972, Ser. No. 255,143

Int. Cl. A01n *18/00, 23/00;* B27k *1/00*

U.S. Cl. 424—30 10 Claims

1. A polymeric article having pest repellent properties comprising

a solid, non-porous, polymeric substrate, and

a solic, non-porous layer of a polymeric composition adherently applied to at least one surface of said substrate, said composition containing at least one pest repellent activating agent distributed within said polymeric composition and capable of migrating from said layer into and throughout said substrate, said agent being present in said layer in sufficient amount so that upon migration from said layer into said substrate and effective level of pest repellent activity is provided throughout said substrate, and on at least one other surface of said substrate which is not in direct contact with said layer.

3,857,935

THERAPEUTIC AGENT DERIVED FROM THE BACTERIUM ACHROMOBACTER STENOHALIS FOR TREATMENT OF CANINE INFECTIOUS HEPATITIS

Joseph K. Chang, 3-21, 6-chome Seijomachi, Setagaya-ku, Tokyo, Japan

Filed Aug. 16, 1971, Ser. No. 172,302

Int. Cl. A61k *17/00, 27/00*

U.S. Cl. 424—95 6 Claims

1. A therapeutic agent for the treatment of canine infectious hepatitis which comprises the filtrate of an admixture of water and inactivated bodies of a bacteria belonging to *Achromcbacter stenohalis.*

3,857,936

MELINACIDIN

Alexander D. Argoudelis, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 26, 1971, Ser. No. 146,872

Int. Cl. H61k *21/00*

U.S. Cl. 424—117 9 Claims

1. A composition of matter, melinacidin II, which:

a. is effective in inhibiting the growth of Gram-positive and Gram-negative bacteria;

b. is soluble in chloroform, methylene chloride, dimethylformamide, and dimethylsulfoxide; and is relatively insoluble in water;

c. has the following elemental analysis: C, 53.90; H, 4.64; N, 10.96; S, 16.99; O, 12.71 (by difference);

d. has an ultraviolet absorption maxima in methanol at 300 mμ ($a = 7.3$), and an ultraviolet absorption maxima in dimethylformamide-methanol at 300 mμ ($a = 6.2$);

e. has an optical rotation $[\alpha]_D^{25} = +726°$ (c, 0.5, $CHCl_3$);

f. has a characteristic infrared absortion spectrum in mineral oil mull as shown in FIG. 1 of the accompanying drawing;

g. has a characteristic infrared absorption spectrum when pressed in a KBr disc as shown in FIG. 2 of the accompanying drawing;

h. has a characteristic NMR spectrum as shown in FIG. 3 of the accompanying drawing; and,

i. has a molecular weight of 855 as determined by vapor pressure osmometry in chloroform.

3,857,937

ANTIBIOTICS 23,671 RP AND 23,672 RP

Denise Mancy, Charenton; Jean Florent, and Jean Lunel, both of Paris, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Feb. 23, 1972, Ser. No. 228,621

Claims priority, application France, Feb. 25, 1971, 71.06492

Int. Cl. A61k *21/00*

U.S. Cl. 424—120 11 Claims

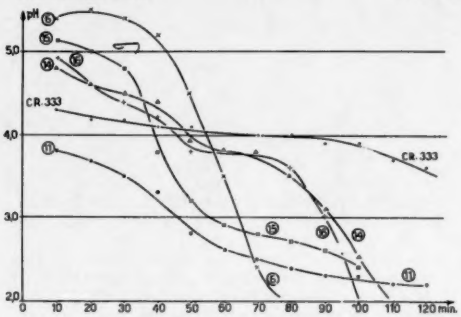
1. The antibiotic herein designated 23,671 RP which has the following characteristics: it is a white crystalline powder melting at 130°–132°C., which is practically insoluble in water and soluble in alcohols, acetone, diethyl ether, dimethylformamide and chlorinated hydrocarbon solvents; it has the elementary composition C = 58.45–58.6%, H = 8.6–8.7%, O = 31.35–31.55%; its optical rotation is $[\alpha]_D^{24.5} = -71.5° \pm 1.5°$ ($c = 1$, methanol); its ultra-violet spectrum (determined in methanol solution) shows an absorption maximum at 285 nm ($E_{1cm}^{1\%} = 1.04$) and an absorption minimum at 252 nm ($E_{1cm}^{1\%} = 0.67$), and its infra-red spectrum (determined with tablets of a mixture with potassium bromide) shows principal absorption bands as follows: 3,480 strong, 2,980 strong, 2,940 strong, 2,920 shoulder, 2,890 medium, 2,840 weak, 1,735 very strong, 1,710 shoulder, 1,630 medium, 1,455 strong, 1,412 medium, 1,375 strong, 1,350 medium, 1,345 shoulder, 1,330 medium, 1,325 shoulder, 1,295 medium, 1,260 shoulder, 1,235 medium, 1,215 very weak, 1,162 very strong, 1,115 strong, 1,095 shoulder, 1,080 very strong, 1,060 strong, 1,035 shoulder, 1,000 strong, 985 shoulder 965 medium, 920 medium, 905 medium, 870 weak, 835 medium, 805 weak, 780 medium, 745 very weak, 725 very weak, 700 weak, 660 shoulder, 645 shoulder, 600 weak, 500 weak, 455 medium, 420 weak and 395 weak.

3,857,938

METHOD OF PREPARING A NOVEL ANTACID PHARMACEUTICAL PRODUCT

Luigi Rovati; Gianpaolo Picciola, and Paolo Senin, all of Milan, Italy, assignors to Rotta Research Laboratorium S.p.A., Milan, Italy

Filed Apr. 13, 1973, Ser. No. 350,866
Claims priority, application Italy, Apr. 13, 1972, 68139/72
Int. Cl. A61k 27/00
U.S. Cl. 424—156 7 Claims



1. A method of preparing a novel antacid pharmaceutical product for oral use characterised by the operational steps of:
a. dissolving in water aluminum sulphate hydrate $Al_2(SO_4)_3 \cdot 18H_2O$ in a proportion of 1,400 – 4,000 ml water per mole sulphate;
b. adding to the resulting solution while stirring aqueous ammonia of a 27–30 percent by weight concentration at a pouring rate of 0.100–0.160 moles/min per mole dissolved sulphate, till a final pH of 9.75–9.81 is reached, thereby uniformly dispersing aluminum hydroxide $Al(OH)_3$ in gelatinous form;
c. uniformly dispersing in the said dispersion basic magnesium carbonate pentahydrate $(MgCO_3)_4.Mg(OH)_2.5H_2O$ in particles not exceeding 50 microns in size, in a quantity corresponding to 1.0–1.2 atoms Mg to one atom Al present in the dispersion;
d. filtering the dispersion from step (c);
e. removing from the filtering residue by washing with water a preponderant proportion of the ammonium sulphate trapped therein as a by-product of step (b);
f. replacing by acetone at least 60 percent by weight of the water impregnating the washed residue;
g. drying the acetone-impregnated residue at a temperature of 60°–80°C to obtain a solid particulate product containing less than 1 percent by weight imbibition water;
h. mechanically reducing the product particles to a size not exceeding 10 microns.

3,857,939

CHEWABLE SODIUM-FREE VITAMIN C TABLETS

Jeffrey Alan Green, Parsippany; Louis Magid, Clifton, and Paul Edward Sleezer, Denville, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 172,883, Aug. 18, 1971, abandoned. This application Nov. 28, 1973, Ser. No. 419,572
Int. Cl. A61k 15/12
U.S. Cl. 424—157 1 Claim

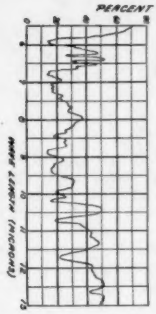
1. A chewable vitamin C tablet having improved palatability characteristics consisting essentially of from about 50mg. to about 500 mg ascorbic acid, a substance selected from the group consisting of magnesium hydroxide, magnesium oxide and mixtures thereof, said substance being present in from about 10 per cent to about 20 per cent by weight of ascorbic acid present and therapeutically inert, pharmaceutically acceptable excipients, said excipients being characterized by being free of sodium ions.

3,857,940

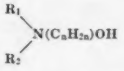
INOSINE DERIVATIVES

Paul Gordon, Chicago, Ill., assignor to Newport Pharmaceuticals, Inc., Newport Beach, Calif.

Division of Ser. No. 145,929, May 21, 1971, , which is a division of Ser. No. 853,864, Aug. 28, 1969, Pat. No. 3,646,007. This application Dec. 7, 1972, Ser. No. 311,732
Int. Cl. A01n 9/00, 9/28
U.S. Cl. 424—180 9 Claims



1. A method of improving memory in a mammal comprising feeding the mammal a complex of inosine with a dialkylaminoalkanol having the formula:



where R_1 and R_2 are lower alkyl, n is an integer of 2 to 4 and the mole ratio of inosine to aminoalkanol is from 1:1 to 1:10, said feeding being in an amount sufficient to improve the memory of the animal.

3,857,941

PHARMACEUTICAL COMPOSITIONS AND USE OF PREDNISOLONE 17-BENZOATE

Alberto Ercoli, Milan; Rinaldo Gardi, Carate Brianza, and Romano Vitali, Casatenovo, all of Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 48,481, June 22, 1970, Pat. No. 3,755,302. This application May 25, 1973, Ser. No. 364,219
Int. Cl. A61k 17/00
U.S. Cl. 424—243 6 Claims

1. A pharmaceutical composition for use in the systemic treatment of inflammatory conditions comprising prednisolone 17-benzoate in association with a systemic pharmaceutical carrier.

3,857,942

SEED PROTECTORS

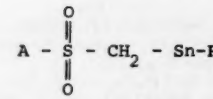
Donald J. Peterson, Springfield Township, Hamilton County, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed June 30, 1971, Ser. No. 158,529
Int. Cl. A01n 9/00
U.S. Cl. 424—245 4 Claims

1. A process for protecting plant seeds from fungal infestation comprising applying to said plant seeds a fungicidally effective amount of an organotin compound selected from the group consisting of compounds of the formulas:

$$R - S - CH_2 - Sn - R_3^1$$

wherein R is selected from the group consisting of C_1 to C_{10} alkyl, phenyl, naphthyl, and tolyl; and R^1 is C_1 to C_{10} alkyl;



wherein A is selected from the group consisting of C_1 to C_{10} alkyl, phenyl, methoxyphenyl, naphthyl, and N,N-dimethylamino; and R^2 is selected from the group consisting of C_1 to C_{10} alkyl, and phenyl; and

$$R_2^4 - N - CH_2 - Sn - R_3^5$$

wherein each R^4 is C_1 to C_{12} alkyl; or both R^4's taken together form a cyclopentomethylene ring; and R^5 is $C_2$to C_{12} alkyl.

3,857,943

NEW PHENOTHIAZINE DERIVATIVES IN THE TREATMENT OF SPASTICITY OF MUSCLES

Shirish Chamdubhai Amin, Hornchurch; David Henry Jones, Rayleigh, and Donald Robert Maxwell, Brentwood, all of England, assignors to May & Baker Limited, Dagenham, Essex, England

Division of Ser. No. 22,706, March 25, 1970, Pat. No. 3,709,879. This application June 2, 1972, Ser. No. 259,339

Claims priority, application Great Britain, Mar. 27, 1969, 16219/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—247 **5 Claims**

1. Method for the treatment of spasticity of skeletal muscle in upper motor neurone (pyramidal) spasticity in a patient which comprises administering to the patient a dosage of 10-(3-dimethylamino-2-methylpropyl)-2-valerylphenothiazine, or a non-toxic acid addition salt thereof, in an amount sufficient to reduce the spasticity without inducing significant sedation in the patient.

3,857,944

1-PIPERAZINOISOQUINOLINES AS INOTROPIC AGENTS

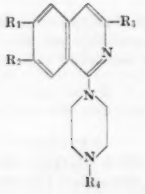
William R. Simpson, Mendham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 246,321, April 21, 1972, abandoned. This application Feb. 20, 1973, Ser. No. 333,490

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **7 Claims**

1. A method of treating myocardial shock which comprises administering to a mammal in need of said treatment an effective amount for the treatment of myocardial shock of a compound of the formula:



where

R_1 and R_2 each independently represent hydrogen, hydroxy, lower alkyl, or lower alkoxy or

R_1 and R_2 together represent alkylenedioxy having 1 to 4 carbon atoms or together with the carbon atoms to which they are attached they represent fused benzene;

R_3 is hydrogen or lower alkyl and

R_4 is hydrogen, lower alkyl, alkenyl having 3 to 6 carbon atoms, aryl having 6 to 10 carbon atoms, aryl having 6 to 10 carbon atoms mono or di-substituted with lower alkoxy, fluorine or chlorine, alkanoyl having 2 to 6 carbon atoms, aroyl having 7 to 11 carbon atoms or aroyl having 7 to 11 carbon atoms, mono or di-substituted with lower alkoxy, fluorine or chlorine, carbalkoxy having 2 to 7 carbon atoms, carbalkenyloxy having 4 to 7 carbon atoms or carbaryloxy having 7 to 11 carbon atoms or

a pharmaceutically acceptable acid addition salt thereof, provided that only one of R_1 and R_2 is tertiary alkyl having the tertiary carbon atom bonded to the aromatic nucleus or tertiary alkoxy having the tertiary carbon atom attached to the oxygen atom.

3,857,945

PHARMACEUTICAL COMPOSITIONS CONTAINING PIPERAZINE DERIVATIVES IN THE TREATMENT OF PAIN

Henry Najer, Paris; Philippe Michel Jacques Manoury, L. Hayles-Roses; Andre Pierre Fernand, Bagneux, and Don Pierre Rene Lucien Giudicelli, Fontenay-sous-Bois, all of France, assignors to Synthelabo, Paris, France

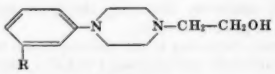
Filed Apr. 2, 1974, Ser. No. 457,201

Claims priority, application France, Apr. 5, 1973, 73.12278; Mar. 4, 1974, 74.07276

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **6 Claims**

1. A method of relieving pain which comprises administering to a subject suffering therefrom an effective amount of a piperazine of the formula:



in which R is CF_3, OCF_3 or SCF_3 or an addition salt thereof with a pharmaceutically tolerated acid.

3,857,946

ADDITION OF HYDROXAMIC ACID DERIVATIVES TO FEEDS FOR REDUCING ODOR OR POULTRY EXCREMENT

Akio Shibata, Okazaki, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 168,496, Aug. 2, 1971, abandoned. This application Dec. 28, 1973, Ser. No. 429,296

Claims priority, application Japan, Apr. 22, 1971, 46-25662

Int. Cl. A61k *15/12*

U.S. Cl. 424—266 **5 Claims**

1. A method of reducing the objectionable odor of poultry excrement which consists essentially of feeding to the poultry a poultry feed having incorporated therein 20 to 100 ppm of a hydroxamic acid selected from the group consisting of acetohydroxamic acid, caprylohydroxamic acid, unsubstituted benzohydroxamic acid, nicotinohydroxamic acid, p-nitrobenzohydroxamic acid, p-chlorobenzohydroxamic acid, p-methoxybenzohydroxamic acid, p-methylbenzohydroxamic acid, o-methylbenzohydroxamic acid, o-chlorobenzohydroxamic acid and o-methoxybenzohydroxamic acid.

3,857,947

FUNGICIDAL ACTIVE PHTHALIMIDES

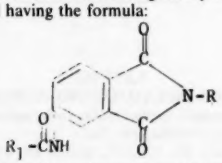
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 280,294, Aug. 14, 1972, abandoned, and a continuation-in-part of Ser. No. 227,274, Feb. 17, 1972, abandoned, said Ser. No. 280,294, is a continuation-in-part of Ser. No. 219,131, Jan. 19, 1972, abandoned, Division of Ser. No. 63,909, Aug. 3, 1970, abandoned, and a continuation-in-part of Ser. No. 227,274, Feb. 17, 1970, abandoned. This application Apr. 20, 1973, Ser. No. 353,167

Int. Cl. A01n 9/22

U.S. Cl. 424—274 26 Claims

1. A method of controlling fungi consisting of contacting the fungi to be controlled with a fungicidally effective amount of a compound having the formula:



wherein R is selected from the group consisting of alkyl having from 1–15 carbon atoms, alkenyl having from 2–4 carbon atoms, alkynyl having from 2–3 carbon atoms and thiochloromethyl, and R_1 is selected from the group consisting of alkyl having from 1–8 carbon atoms, thiomethyl, cyclopropyl, alkenyl having from 2–3 carbon atoms and aminoalkyl having from 1–4 carbon atoms.

3,857,948

SALINOMYCIN

Yoshiaki Tanaka; Hideo Saito, both of Tokyo; Yukio Miyazaki, Ageo; Hideo Sugawara, Saitama; Junsaku Nagatsu, and Mitsuo Shibuya, both of Tokyo, all of Japan, assignors to Kaken Chemical Co., Ltd., Tokyo, Japan

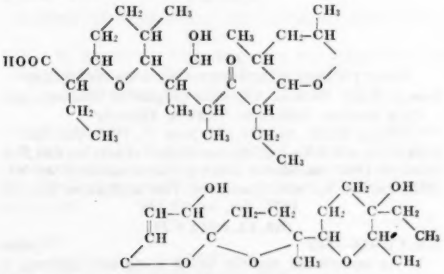
Continuation-in-part of Ser. No. 302,392, Oct. 31, 1972, abandoned. This application Oct. 26, 1973, Ser. No. 410,030

Claims priority, application Japan, Mar. 3, 1972, 47-21553

Int. Cl. A61k 21/00

U.S. Cl. 424—283 3 Claims

1. An anti-coccidium composition which comprises an effective amount for treating coccidium of a Salinomycin having the formula in acid form of:



and a pharmaceutical carrier.

3,857,949

PROPHYLAXIS AND TREATMENT OF CARDIAC DISORDERS

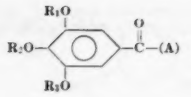
Aldo Garzia, Lodi, Italy, assignor to Instituto Chemioterapico Italiano S.p.A., Milan, Italy

Division of Ser. No. 50,325, June 26, 1970,. This application Feb. 16, 1972, Ser. No. 226,985

Int. Cl. A61k 27/00

U.S. Cl. 424—317 8 Claims

1. A method of prophylaxis or treatment of ischemic cardiac disorders comprising pharmacologically administering to an animal a compound represented by the formula



wherein each of R_1, R_2 and R_3 is methyl, ethyl or propyl and A is a saturated aliphatic hydrocarbon radical containing 3–8 carbon atoms substituted with one carboxylic acid group, or a pharmaceutically-acceptable salt thereof, at a dosage within the range of 25–500 mg/kg/day.

3,857,950

THERAPEUTICAL COMPOSITION OF N-PROPIONYL-EPSILON-AMINO-CAPROIC ACID WITH METHOD OF TREATMENT

Jean Choay, Neuilly-sur-Seine, France, assignor to Choay S.A., Paris, France

Continuation-in-part of Ser. No. 820,298, April 29, 1969, abandoned. This application June 21, 1972, Ser. No. 264,753

Claims priority, application France, May 3, 1968, 68.150414; Aug. 2, 1968, 68.161612

Int. Cl. A61k 27/00

U.S. Cl. 424—319 2 Claims

1. A method for the treatment of a mammal suffering from a cutaneous wound or burn or from a bone fracture, comprising the steps of orally or topically administering to said mammal a therapeutically effective dose of a pharmaceutical composition containing as the active imgredient N-propionyl-epsilon-aminocaproic acid or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier therefor.

3,857,951

USE OF 2-MERCAPTOPROPIONYLGLYCINE AND ITS ALKALI METAL SALTS IN TREATING RESPIRATORY DISEASES

Jean-Pierre Buret, Osny, France, assignor to Laboratories Cassenne, Paris, France

Filed Sept. 14, 1973, Ser. No. 397,865

Int. Cl. A61k 27/00

U.S. Cl. 424—319 8 Claims

1. A method of producing a mucolytic effect in a patient having a respiratory disease which comprises administering to said patient a mucolytically effective amount of a compound selected from the group consisting of 2-mercaptopropionylglycine and its sodium, potassium and lithium salts.

3,857,952

CERTAIN BENZENE DERIVATIVES USEFUL IN TREATING CARDIAC DISORDERS

Kenneth Robert Harry Wooldridge, Brentwood, and Berkeley Basil, Highwood, near Chelmsford, both of England, assignors to May & Baker Limited, Dagenham, Essex, England

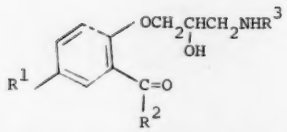
Division of Ser. No. 785,403, Dec. 19, 1968, Pat. No. 3,726,919. This application Aug. 3, 1972, Ser. No. 277,607

Claims priority, application Great Britain, Dec. 22, 1967, 58516/67; May 14, 1968, 56513/68; Aug. 2, 1968, 37103/68

Int. Cl. A61k 27/00

U.S. Cl. 424—324 3 Claims

1. A pharmaceutical composition which comprises, as the active ingredient, an effective amount for the treatment or prophylaxis of angina pectoris or cardiac arrhythmia of a compound of the formula:



wherein R^1 represents alkanoylamino of one through nine carbon atoms, R^2 represents alkyl of one through six carbon atoms, and R^3 represents alkyl of one through six carbon atoms or cycloalkyl of three through six carbon atoms, or a non-toxic acid addition salt thereof, in association with a pharmaceutically-acceptable carrier.

3,857,953

ARYLIDENE CYCLANONES IN INHIBITING ANDROGEN ACTION

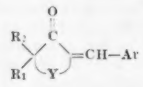
William B. Scanlon, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 182,123, Sept. 20, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 315,947

Int. Cl. A61k *27/00*

U.S. Cl. 424—331 **7 Claims**

1. A process for inhibiting the action of androgens which comprises administering to a subject exhibiting a superabundance of androgen action an effective quantity of an arylidene cyclanone having the formula



in which Y is —CHR—, —CHR—CHR—, or —CHR—CHR—CHR—; each R independently is hydrogen, methyl, ethyl or propyl; Ar is phenyl, furyl, thienyl, styryl, naphthyl, or a mono- or di-substituted derivative of each, the substituents being selected from the group consisting of hydroxy, loweralkoxy, loweralkyl, methylenedioxy, amino, loweralkylamino, di-loweralkylamino, nitro and halo; R_1 is hydrogen, cyclohexyl, phenyl, loweralkyl-substituted cyclohexyl, or loweralkyl-substituted phenyl, and R_2 is hydrogen; R_1 and R_2 taken together is =CH—Ar as herein defined; or R_1 and R_2 taken together with the portion of the cyclanone ring to which they are attached is

or a loweralkyl or loweralkoxy substituted derivative thereof.

3,857,954

ACARICIDES

Yukio Aoki, Ageo; Susumu Yoshida, Tokyo; Shoichi Kato; Satoshi Inada, both of Ageo, and Shuichi Ishida, Oomiya, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

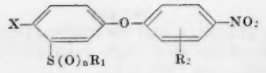
Filed Feb. 13, 1973, Ser. No. 332,181

Claims priority, application Japan, Feb. 14, 1972, 47-14865

Int. Cl. A01n *9/00, 9/12, 9/14*

U.S. Cl. 424—337 **1 Claim**

1. The method of controlling acarids comprising applying to acarids and their eggs an acaricidally effective amount of a compound of the formula



where

X is selected from the group consisting of Cl, Br, CH_3, CH_3O and C_4H_9O,

R_1 is selected from the group consisting of an alkyl having from 1 to 5 carbon atoms and allyl,

R_2 is selected from the group consisting of, H, CH_3 CF_3, CH_3O and Cl, and n is an integer of 0, 1 and 2.

3,857,955

ANTI-INFLAMMATORY AGENTS

Winston S. Marshall, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 129,237, March 29, 1971, Pat. No. 3,745,223, which is a continuation-in-part of Ser. No. 91,559, Nov. 20, 1970, abandoned, which is a continuation-in-part of Ser. No. 888,802, Dec. 29, 1969, abandoned. This application Oct. 27, 1972, Ser. No. 301,685

Int. Cl. A61k *27/00*

U.S. Cl. 424—340 **13 Claims**

1. The method of treating inflammatory conditions in mammals which comprises administering to a mammalian subject from 1 to 100 mg./kg. daily of a compound of the formula

Ar—R

wherein

Ar represents an aryl moiety selected from the group consisting of 3-phenoxyphenyl, 4-phenoxyphenyl, 4-phenoxy-3-methylphenyl, 4-phenoxy-3-methoxyphenyl, 6-methoxy-2-naphthyl, or 3-chloro-4-allyloxyphenyl; and R represents iso-propyl, iso-propenyl, or iso-butyl, with the limitation that when R is iso-butyl, Ar is 4-phenoxyphenyl.

3,857,956

INSECTICIDAL COMPOSITIONS AND METHODS

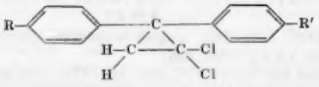
George Holan, Victoria, Australia, assignor to Monsanto Australia Limited, Melbourne, Victoria, Australia

Division of Ser. No. 834,177, June 17, 1969, Pat. No. 3,642,910, which is a continuation-in-part of Ser. No. 684,554, Nov. 20, 1967, abandoned, which is a continuation of Ser. No. 402,949, Oct. 9, 1964, abandoned. This application Nov. 23, 1970, Ser. No. 92,235

Int. Cl. A01n *9/24*

U.S. Cl. 424—341 **7 Claims**

1. An insecticidal method which comprises applying to insects or their habitat an insecticidally effective amount of a 1,1-diphenyl-2,2-dichlorocyclopropane derivative of the formula



wherein R and R′ are alkoxy groups containing from one to three carbon atoms inclusive.

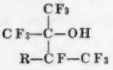
3,857,957

PERFLUORO-TERTIARY-ALKANOL COMPOUNDS AS FUMIGANTS

John Butler O'Brien, Morris Plains; Cyril Woolf, Morristown, both of N.J., and Robert Ernest Arthur Dear, Mount Kisco, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 13, 1972, Ser. No. 217,634
Int. Cl. A01n 9/24
U.S. Cl. 424—343 3 Claims

1. A process for controlling insect organisms infesting an enclosed space which comprises contacting said insect organisms with an insecticidally effective concentration of a compound of the formula



wherein R is selected from the group consisting of fluorine and trifluoromethyl, said compound being employed in a concentration of about 0.063 pounds per thousand cubic feet of enclosed space.

3,857,958

ANTIPHLOGISTIC PHARMACEUTICAL COMPOSITIONS CONTAINING 4-(4-BIPHENYLYL)-1-BUTANOL AND METHOD OF USE

Ernst Seeger; Wolfhard Engel; Helmut Teugel, and Gunther Engelhardt, all of Biberach-Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Division of Ser. No. 294,940, Oct. 4, 1972, Pat. No. 3,801,654. This application Jan. 17, 1974, Ser. No. 434,041
Claims priority, application Germany, Oct. 15, 1971, 2151312
Int. Cl. A61k 27/00
U.S. Cl. 424—343 2 Claims

1. An antiphlogistic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective antiphlogistic amount of 4-(4'-biphenylyl)-1-butanol.

3,857,959

INHIBITING FUNGICIDAL IMPAIRMENT OF PLANT GROWTH

Robert H. Rosenwald, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 27, 1972, Ser. No. 266,825
Int. Cl. A01n 9/00, 9/26
U.S. Cl. 424—346 1 Claim

1. A method of inhibiting fungicidal impairment of plant growth which comprises applying t-butylhydroquinone to the area of said plant growth in an amount of 1g. to 1Kg. per 100 square feet.

3,857,960

TOILET OIL BAR

Leonard Mackles, New York, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,593
Int. Cl. A61k 7/00
U.S. Cl. 424—365 9 Claims

1. A solid, hard and firm toilet oil bar having the appearance and feel of a soap bar; said oil bar releasing mineral oil when wet with warm water and applied to the skin, said bar containing mineral oil solidified with an amide component; said mineral oil constituting between about 70 percent to 85% by weight of said bar, and said amide component constituting between about 5 percent to 30% by weight of said bar and being selected from the group consisting of monoethanolamine stearic acid amide, N,N' distearoyl ethylenediamine and mixtures thereof.

3,857,961

METHOD FOR PRODUCING FOIE GRAS BY INDUCTION OF HYPERPHAGIA IN GEESE

Denise Albe-Fessart, 51 rue Molitor, Paris; Pierre Auffray, 4 rue Suzanne Masson 78, Saint-Cyr l'Ecole, and Francois Gallouin, 36 rue Clement Perrot, Vitry-sur-Seine, all of France

Filed July 20, 1972, Ser. No. 273,671
Claims priority, application France, July 21, 1971, 71.26768
Int. Cl. A22c 21/00
U.S. Cl. 426—2 10 Claims

1. A method for obtaining foie gras by induction of hyperphagia in geese which comprises the administration of an anti-catecholamine substance into the cerebrospinal fluid of the goose in an amount not more than about 300 μg to induce hyperphagia.

3,857,962

FLAVOR PRESERVATION IN SUGARLESS CHEWING GUM COMPOSITIONS AND CANDY PRODUCTS

Edward B. Westall, San Jacinto, Calif.; James J. Scanlan, Hillsdale, N.J., and Miroslaw Sahaydak, Great Neck, N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

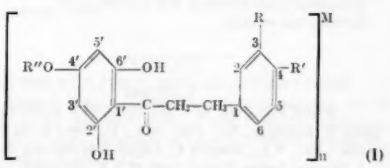
Continuation-in-part of Ser. No. 189,374, Oct. 14, 1971, Pat. No. 3,821,417, which is a continuation-in-part of Ser. No. 88,144, Nov. 9, 1970, abandoned. This application Oct. 31, 1973, Ser. No. 411,568
Int. Cl. A23g 3/00, 3/30
U.S. Cl. 426—3 40 Claims

1. A sugarless chewing gum composition having preserved and prolonged flavor qualities comprises:

A. From about 0 to about 0.5 percent by weight, based on the total weight of the formulation, of an artificial sweetener;

B. From about 0.4 to about 2.0 percent by weight of a natural or synthetic essential oil flavor; and

C. At least about 0.0025 percent by weight of at least one dihydrochalcone glycoside monosalt flavor preserving and prolonging agent having the Formula (I):



(I)

wherein R represents a radical selected from the group consisting of hydrogen and hydroxy; R' represents a radical selected from the group consisting of hydrogen, hydroxy and 1 to 3 carbon alkoxy; and R'' represents a glycoside residue selected from the group consisting of β-rutinosyl, neohesperidosyl and β-D-glucosyl; and M is a mono- or divalent metal selected from the group consisting of an alkali metal and an alkaline earth metal, and n is an integer from 1 to 2 corresponding to the valence of the selected metal M.

3,857,963

METHOD FOR FORMING CENTER-FILLED CHEWING GUM

Allan H. Graff, New York, N.Y., and Richard A. Reggio, East Rutherford, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 271,086, July 12, 1972, Pat. No. 3,806,290. This application Nov. 8, 1973, Ser. No. 414,050

Int. Cl. A23g *3/30*

U.S. Cl. 426—3 13 Claims

1. A method of forming center-filled chewing gum comprising the steps of:

extruding a rope of chewing gum having a hollow center through an orifice,

feeding a stream of center-fill through said orifice to said hollow center downstream of said orifice, and

venting air from said hollow center prior to entry of said center-fill stream therein.

3,857,964

CONTROLLED RELEASE FLAVOR COMPOSITIONS

Seymour Yolles, Newark, Del., assignor to David E. Brook, Acton, Mass., a part interest

Filed Feb. 9, 1973, Ser. No. 331,324

Int. Cl. A23g *3/00*

U.S. Cl. 426—3 17 Claims

1. A controlled-release flavor composition comprising a core of flavor particles and an outer coating of a physiologically inert, edible, water-softenable and swellable material, said flavor particles having a particle size between −25 and +35, U.S. Screen Series, and said flavor particles being formed from an intimate dispersion of a flavor acetal or flavor ketal in a physiologically inert, masticatory polymeric binder, said acetal or ketal comprising a reaction product of a physiologically inert and edible polyhydroxy compound and a physiologically inert and edible flavor aldehyde or ketone, respectively.

3,857,965

METHOD FOR MAKING A CHEWING-GUM COMPOSITION

Ronald L. Ream, North Aurora, Ill., assignor to Wm. Wrigley, Jr. Company, Chicago, Ill.

Filed Oct. 11, 1973, Ser. No. 405,711

Int. Cl. A23g *3/00*

U.S. Cl. 426—3 14 Claims

1. A method for making a chewing-gum composition comprising the steps of:

melting crystalline sorbitol by heating;

mixing chewing-gum base and a crystallization retardant with said sorbitol;

homogeneously blending the mixture; and

forming the mixture.

3,857,966

PROCESS FOR BLAND, SOLUBLE PROTEIN

Jacob R. Feldman, New City, N.Y.; Gerhard J. Haas, Woodcliff Lake, N.J.; Joaquin C. Lugay, Thornwood, and Claire J. Wiener, Spring Valley, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 16, 1973, Ser. No. 389,097

Int. Cl. A23j *3/00*

U.S. Cl. 426—7 23 Claims

1. An improved process for preparing a bland, soluble, nutritious, enzymatically hydrolyzed proteinaceous material comprising:

a. first reacting a protein at alkaline pH with an alkaline microbial protease;

b. then reacting the protein at neutral pH with a plant enzyme and a neutral microbial protease.

3,857,967

PREPARATION OF FOOD AND BEVERAGES WITH PEPTIDOGLUTAMINASE

Mamoru Kikuchi, Nagareyama; Kenji Sakaguchi, Kashiwa, and Eiichi Nakano, Noda, all of Japan, assignors to Kikkoman Shoyu Co., Ltd. and Noda Institute for Scientific Research, both of Noda-shi, Japan

Division of Ser. No. 141,704, May 10, 1971, Pat. No. 3,796,633, which is a continuation-in-part of Ser. No. 71,129, Sept. 10, 1970, abandoned. This application Aug. 10, 1973, Ser. No. 387,375

Int. Cl. A23l *1/20*

U.S. Cl. 426—18 3 Claims

1. A process for preparing a beverage or food containing, as a part of palatable components, peptides and/or amino acids obtained by hydrolysis of a proteincontaining raw material, characterized by adding a member selected from the group consisting of bacterial cells, frozen cells, acetone treated powder of the cells, peptidoglutaminase-I, peptidoglutaminase-II and a mixture of peptidoglutaminase-I and peptidoglutaminase-II, which are originated from *Bacillus*, circulans ATCC 21590 to said beverage or food to increase the amount of L-glutamic acid and/or a peptide-bonded glutamic acid contained therein.

3,857,968

METHOD OF PREPARING ANIMAL FOOD OF INCREASED PALATABILITY

Gerhard Julius Haas, Woodcliff Lake, N.J., and Joaquin Castro Lugay, Thornwood, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 346,364, March 29, 1973, abandoned. This application Apr. 18, 1974, Ser. No. 461,831

Int. Cl. A23k *1/10*

U.S. Cl. 426—33 41 Claims

1. A process for improving the palatability of an animal food which comprises:

conditioning an aqueous meat slurry, comprising fat and protein, by emulsifying the fat in the meat slurry with the water present in the slurry, and treating the meat slurry, containing the emulsified fat and the protein, with an enzyme mixture comprising lipase and protease in amounts effective to cause an enzymatic reaction resulting in the production of a palatability improving composition; and

incorporating the palatability improving composition into the animal food in an amount which is effective to increase the palatability of the animal food.

3,857,969

PROCESS OF MAKING A MILK COAGULATING ENZYME PREPARATION

Torsten O. Wiken, Delft, and Gerhard Bakker, Sittard, both of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Continuation of Ser. No. 368,730, June 11, 1970, which is a continuation of Ser. No. 166,262, July 26, 1971, abandoned. This application Feb. 1, 1974, Ser. No. 438,630

Claims priority, application Netherlands, Aug. 6, 1970, 7011613

Int. Cl. C12d *13/10*; A23c *19/00*

U.S. Cl. 426—36 7 Claims

1. A process for producing an enzyme preparation capable of coagulating milk comprising the steps of cultivating a fungi of the group *Mucor lamprosporus* or a natural or synthetic variant or mutant thereof in a medium containing available carbon, nitrogen and trace nutrients, said cultivation being accomplished under aerobic conditions at a temperature of between 15° and 45°C throughout an incubation period of about 2 to about 12 days and recovery the enzyme preparation from said medium.

3,857,970

PREPARATION OF SOY CHEESE

Haruo Tsumura, Osaka; Yukio Hashimoto, Izumi, and Hayata Kubota, Izumiotsu, all of Japan, assignors to Fuji Oil Co. Ltd., Osaka, Japan

Filed Apr. 17, 1973, Ser. No. 351,813
Int. Cl. A23c *19/02*
U.S. Cl. 426—46 11 Claims

1. A process for making a cheese-like food from soy milk comprising

preparing an emulsion containing soy milk and an edible fat in sufficient amounts to form an oil-in-water emulsion;

inoculating said emulsion with a lactic acid-forming cheese starter culture and incubating the inoculated emulsion to form a fermented broth;

adding to said fermented broth a coagulant selected from the group consisting of aldonic acid lactones, uronic acid lactones and mixtures thereof;

heating the resultant mixture to a temperature within the range of about 40° to 70° C. and maintaining the mixture at said temperature for a time sufficient to form a curd therefrom;

separating whey from said curd;

cooking said curd; and

aging said cooked curd.

3,857,971

RUMINANT FEED ADDITIVE AND METHOD OF PREPARING THE SAME

Kamal M. Abdo, Columbia, Md., and Glenn M. Cahilly, Olean, N.Y., assignors to W. R. Grace Co., New York, N.Y.

Continuation-in-part of Ser. No. 330,906, Feb. 9, 1973, abandoned, which is a continuation of Ser. No. 46,813, June 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 720,497, April 11, 1968, abandoned. This application June 25, 1973, Ser. No. 373,263
Int. Cl. A23k *1/00*; A61k *27/00*
U.S. Cl. 426—53 12 Claims

1. A method for preparing a feed product for ruminants, comprising the steps of: introducing viable microorganisms isolated or cultured from the rumen fluid of a ruminant animal into a nutrient mixture consisting essentially of an aqueous suspension of a starch-containing concentrate feed ration comprising a member selected from the group consisting of grain, alfalfa, milo, cottonseed meal, linseed meal, and soybean meal, culturing said suspension under carbon dioxide at a temperature in the range of 30°–50° C. through stages sufficient to insure complete in vitro adaptation of the rumen microorganisms to said feed ration, and collecting said adapted rumen microorganisms to form said feed product; adaptation being determined by at least one of the following procedures A and B;

A. a one-liter culture, cultured on 87% concentrate feed with artificial saliva mix for 24 hours at 39° C., analyzes 0.05 mg/ml l-lactic acid;

B. an 11-liter fermentation culture, cultured on 87% concentrate feed with artificial saliva mix for 8 hours at 39° C., analyzes 3.5 mg/ml volatile fatty acids.

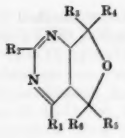
3,857,972

FLAVORING WITH AN OXOCYCLIC PYRIMIDINE

William J. Evers, Atlantic Highlands, and Joseph Sieczkowski, Matawan, both of N.J., assignors to International Flavors & Fragrance Inc., New York, N.Y.

Division of Ser. No. 123,024, March 10, 1971, abandoned. This application Jan. 22, 1973, Ser. No. 325,674
Int. Cl. A23l *1/26*
U.S. Cl. 426—65 4 Claims

1. A process for altering the flavoring of a foodstuff which comprises adding thereto a small but flavor-altering amount of at least one oxocyclic pyrimidine having the formula



wherein R_1 is alkyl containing from one to six carbon atoms or hydrogen; R_2, R_3, R_4, R_5 and R_6 are the same or different and are hydrogen or alkyl containing from one to six carbon atoms.

3,857,973

ALUMINUM ALLOY CONTAINER END AND SEALED CONTAINER THEREOF

Arvil B. McKee, Lower Burrell; Robert H. Brown, Natrona Heights, and Ralph L. Horst, New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 123,778, March 12, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,830
Int. Cl. B67b *7/40*; B32b *15/00*
U.S. Cl. 426—122 11 Claims

1. In an aluminum alloy container end having a removable portion defined by at least one score line in the outer surface of said container end can end said score line describing a closed perimeter for said removable portion and extending sufficiently through its thickness to locally weaken it to render said portion defined thereby manually removable substantially by tearing to provide an access opening in said container end, the container end being produced from an aluminum alloy sheet, the improvement wherein said aluminum alloy sheet is provided as a composite sheet composed of a core alloy layer containing at least 90 percent aluminum, 4 to 6 percent Mg and up to 1% Mn and an inside cladding layer composed of an alloy consisting essentially of 1 to 1.5 percent Zn, the balance Al of at least 99.2 percent purity, said improvement serving to improve resistance to perforation attack in the region of said score line.

3,857,974

PROCESS FOR THE PRODUCTION OF FROZEN EGGS

Moustafa M. Aref; John J. Stroz, both of Ottawa, Ontario, and Gordon W. Johnson, Ashton, Ontario, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Ontario, Canada

Filed Nov. 24, 1969, Ser. No. 879,626
Int. Cl. A23l *1/32*
U.S. Cl. 426—148 8 Claims

1. A frozen food egg substance, comprising free flowing discrete, particles of said substance, and each said particle is of pop-corn-like form.

3,857,975

METHOD FOR PREPARING JELLIFIED FOODS

Masaru Misaki; Yukizo Tsujimoto; Tatuo Nakagawa, all of Osaka; Junko Sukenari, Hyogo, and Shintaro Moritaka, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed July 3, 1973, Ser. No. 376,174
Claims priority, application Japan, July 5, 1972, 47-67720
Int. Cl. A23g *1/04*
U.S. Cl. 426—167 5 Claims

1. A method for preparing a jellified food which comprises heating an aqueous dispersion containing a thermally gelable polysaccharide consisting mainly of β-1, 3-glucose units produced by a microorganism selected from the group consisting of *Alkaligenes faecalis* var. *mixogenes* and *Agrobacterium radiobacter* as the gelling agent to 55°C to 80°C under stirring to prepare a fluid containing from 0.5 to 5 weight percent of said

polysaccharide, and leaving the fluid to stand and cool to a temperature not higher than 40°C.

3,857,976

FOOD PRODUCTS CONTAINING EPICHLOROHYDRIN-INHIBITED, STABILIZED RETORT STARCHES

Chester D. Szymanski, Martinsville; Martin M. Tessler, Edison, and Harvey Bell, North Plainfield, all of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 251,344, May 8, 1972, Pat. No. 3,804,828. This application Dec. 17, 1973, Ser. No. 425,560

Int. Cl. A23l *1/14*

U.S. Cl. 426—167 **7 Claims**

1. A retortable food product containing a starch thickener in which a substantial portion of the starch therein is an epichlorohydrin cross-linked hydroxypropyl cereal starch having a hydroxypropyl D.S. of about 0.06 to about 0.30 and a pH 3 buffered Brabender viscosity of 250–600 BU at 92°C. and 475–650 BU at 92°C. plus 10 minutes, with the viscosity at 92°C. plus 10 minutes greater than the viscosity at 92°C.

3,857,977

FOOD FLAVOR PELLETS WITH WHEAT FLOUR, SOY FLOUR AND BUTTERMILK BASE

Eric G. Huessy, Eden Prairie, Minn., assignor to Peavey Company, Minneapolis, Minn.

Filed May 29, 1973, Ser. No. 364,914

Int. Cl. A23l *1/26*

U.S. Cl. 426—189 **3 Claims**

1. An edible food flavoring pellet for incorporation in dry food systems which comprises:

a. a homogeneous mixture having a wheat flour, soy flour, and dry buttermilk base with the following formulation:

Ingredient	Percentage Range
Wheat Flour	25 – 35
Vegetable Oil	11 – 18
Dried Buttermilk	17 – 18
Corn Syrup Solids	8 – 10
Whey	8 – 9
Soy Flour	4 – 8
Salt	3 – 4
Glycerin	about 2
Xanthan Gum	about 0.1
Flavoring, lactic acid, garlic or onion flavoring	as required for balance

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3,857,978

SOFT DRINK STABILIZER

Haraldo Alberto Schwartz, Rio de Janeiro; Odilio Lotario Moldenhauer, E. Rio, and Seymour Maurice Greenman, Rio de Janeiro-GB, all of Brazil, assignors to Concentrados Nacionais S.A., Rio de Janeiro, Brazil

Filed June 4, 1973, Ser. No. 366,587

Int. Cl. A23l *1/00, 3/00*

U.S. Cl. 426—190 **7 Claims**

1. A stabilizing agent for flavoring oil containing soft drink products comprising the combined abietic acid-fumaric acid ester of pentaerythritol.

3,857,979

PROCESS FOR TREATING MUSHROOMS

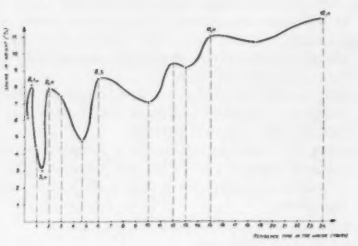
Max Beauvais, Saint-Georges-Motel, Eure, France, and Robert A. Sindall, Jr., 713 E. Lombard St., Baltimore, Md. 21202

Filed Mar. 9, 1973, Ser. No. 339,846

Claims priority, application France, Mar. 24, 1972, 72.10429; Jan. 19, 1973, 73.01894

Int. Cl. A23l *1/28*

U.S. Cl. 426—204 **8 Claims**



1. A process for treating an edible mushroom which comprises

immersing said mushroom in demineralized water at a temperature of 13° to 15°C,

submitting the immersed mushroom to the effects of a vacuum of at least 500 mm Hg for about 30 minutes,

releasing said vacuum,

allowing said mushroom to stand in said demineralized water for at least an additional 12 hours,

blanching, and

sterilizing said mushroom.

3,857,980

PROCESS FOR PREPARATION AND PRESERVATION OF EGGS

Chester A. Johnson, P.O. Box 1437, Turlock, Calif. 95380

Filed Sept. 17, 1973, Ser. No. 397,578

Int. Cl. A23b *5/00*

U.S. Cl. 426—250 **20 Claims**

1. A process for preparing and preserving eggs comprising the steps of:

a. separating the egg yolks and whites from the egg shells;

b. mixing beta carotene with the yolks and whites to form a liquid admixture;

c. mixing said yolks and whites with a 1% to 5% alkaline solution in a ratio of one gallon solution to from 100 to 175 pounds yolks and whites prior to cooking;

d. placing the admixture in a plastic bag and inserting the bag into a cooking container;

e. cooking the admixture at a temperature in the range 160°–185°F for a time sufficient to raise the internal temperature of the admixture to the range 145°–160°F before the portion of the admixture adjacent the periphery of said container becomes overcooked; and

f. freezing the cooked admixture.

3,857,981

PRESERVING RED COLOR IN RED MEATS

Kunito Sato, Chicago, and Harold K. Herring, Wheaton, both of Ill., assignors to Armour and Company, Chicago, Ill.

Filed June 20, 1973, Ser. No. 371,750

Int. Cl. A23b *1/00*

U.S. Cl. 426—265 **7 Claims**

1. In a process for preserving the bright red color of red meat the steps of treating said meat with from 0.01 to 0.50 percent by weight of 5-hydroxy-2-(hydroxymethyl)-4-pyrone and storing said meat with said compound incorporated

therein for a period of at least one day whereby the bright red color of the red meat is preserved.

3,857,982

PROCESSING FOR PRODUCING POTATO CHIP FLAVOR CONCENTRATE

Michael Robert Sevenants, Forest Park, Ohio, assignor to The Procter Gamble Company, Cincinnati, Ohio

Filed Nov. 30, 1973, Ser. No. 420,727
Int. Cl. A23l *1/26*
U.S. Cl. 426—271 **10 Claims**

1. A process for producing a potato-chip flavor concentrate comprising:

a. heating a potato source material until uniformly brown in color;

b. extracting flavor ingredients from the browned product of step (a) by contacting with a solvent selected from the group consisting of water, lower alcohols and mixtures thereof;

c. contacting the extract of step (b) with a cation-exchange resin, thereby to adsorb flavoring compounds onto the resin; and

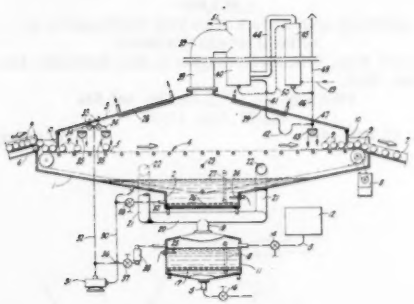
d. eluting the adsorbed flavoring compounds from the cation-exchange resin.

3,857,983

METHOD OF REMOVING NATURAL WAX FROM THE SKIN OF FRUITS AND VEGETABLES

Theodore L. Roth, P.O. Box 4810, San Jose, Costa Rica

Filed Sept. 25, 1972, Ser. No. 291,962
Int. Cl. A23l *1/00*
U.S. Cl. 426—287 **2 Claims**



1. A method, of removing natural wax from the skin of waxy-skinned produce, comprising the steps of establishing an enclosure, introducing produce into the enclosure, subjecting the produce in said enclosure to a wax-removing solvent in an initially vapor phase, the vapor condensing in part in the enclosure as a solvent condensate and providing in such enclosure a dewaxing wash on the produce, withdrawing uncondensed vapor from the enclosure, condensing such withdrawn vapor exteriorly of the enclosure as a supplemental solvent condensate, and then feeding such supplemental solvent condensate to and discharging it in the enclosure above the produce to fall thereupon as an additional dewaxing wash.

3,857,984

METHOD OF CONSERVING FORAGE WITH ACID AND NITRITE MIXTURE

Ian Holden Pike, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 15, 1972, Ser. No. 289,744
Claims priority, application Great Britain, Sept. 23, 1971, 44403/71
Int. Cl. A23k *3/03*
U.S. Cl. 426—335 **5 Claims**

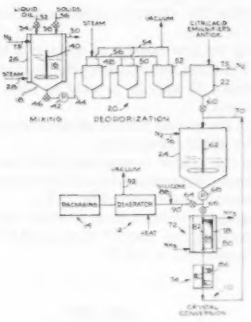
1. A method of improving the nutritional value of silage which comprises the step of adding to the forage to be conserved acid in an amount from 0.1% to 3% by weight of the forage, said acid having a concentration in the range of 10% to 90% by volume and being selected from the group consisting of hydrochloric acid, sulfuric acid, phosphoric acid and mixtures thereof, and at least one nitrite in an amount from 10 to 2,000 ppm by weight of the forage selected from the group consisting of sodium nitrite and potassium nitrite.

3,857,985

POURABLE LIQUID SHORTENING

Edward Reid, Brea, and Perry W. Morgan, Jr., Fullerton, both of Calif., assignors to Hunt-Wesson Foods Inc., Fullerton, Calif.

Filed July 23, 1973, Ser. No. 381,527
Int. Cl. A23d *5/02*
U.S. Cl. 426—362 **21 Claims**



1. A method of forming a pourable, liquid shortening comprising the steps of:

1. forming a batch comprising a mixture of a minor amount of finely divided, substantially fully saturated, normally solid glycerides, at least 90 percent of which are convertible to the form of beta crystals, dispersed in a liquid fatty ester triglyceride, vegetable oil;

2. heating the batch to a temperature above the melting point of the solid glycerides to form a large, constant temperature, warm body;

3. dynamically and incrementally cooling the warm body in a circulation stage comprising:

a. continuously removing a minor, warm portion from a first point of the warm body;

b. rapidly cooling the removed portion to a temperature below the crystallization point of the solid glycerides to form a cooled suspension of solid crystals in said oil;

c. returning the cooled suspension portion to the warm body at a point remote from said first point and melting said crystals thereat to incrementally cool said body;

4 continuing steps (3) (a), (b) and (c) until the solid crystals returned to the body at said remote point are not

completely melted in said body and the body is cooled to a temperature below the temperature of phase change of the solid glycerides from alpha and beta prime to beta crystals;

5. then holding the body at said phase change temperature to convert all of said solid glycerides to a stable, intimate suspension of beta crystals in said oil; and

6. deaerating the suspension;

3,857,986

METHOD OF PREPARING A PACKAGED HEAT STERILIZED MINCED MEAT PRODUCT

Svend Anker Svendsen, Hvalso, Denmark, assignor to Slagteriernes Forskningsinstitut, Roskilde, Denmark

Filed Nov. 8, 1972, Ser. No. 304,798

Claims priority, application Denmark, Nov. 8, 1971, 15356/71

Int. Cl. A22c *18/00*

U.S. Cl. 426—371 **4 Claims**

1. In a method of preparing a packed, heat sterilized mince meat product wherein the meat is salted with salt and minced to form a binder mince component and a coarse mince component and the two are mixed, packed and heat sterilized at high temperatures, the improvement comprising the following steps:

a. chopping the meat before salting into pieces of such dimensions in cms that the ratio of volume to total surface area of the individual meat pieces is less than or equal to 1

b. mixing the chopped meat pieces with from 20 to 40 gms of salt to one kg meat,

c. separating the chopped salted meat into a first and a second portion,

d. mincing the first portion of meat in a high-speed cutter for 2–3 minutes and adjusting the fat content of the meat to between 12 and 20 percent to form a binder mince component,

e. mincing the second portion of meat from step (c) to form a coarse mince component,

f. mixing the coarse component with the minced binder component, the temperature of the meat during steps (a) – (f) being maintained below 22℃,

g. packaging the minced meat product, and

h. heat treating the packed meat product to a sterilizing temperature above 108℃.

3,857,987

WET MILLING OF COARSE GROUND WHEAT AND OTHER CEREAL GRAINS

Saul Rogols, Circleville; Edward J. Hueckel, Columbus, and John W. Salter, Westerville, all of Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Dec. 26, 1973, Ser. No. 428,558

Int. Cl. A23j *1/14*

U.S. Cl. 426—436 **12 Claims**

1. A process for recovering starch, vital gluten, and a nutritious mixture of bran, germ and fiber from cereal grains, the steps comprising:

A. Dry grinding the grain kernels to a coarse particle size such that 91–95% of said particles will pass through a No. 14 mesh screen; 80–90% will pass through a No. 20 mesh screen; and 40–56% will pass through a No. 45 mesh screen;

B. Forming a dough by mixing about one part by weight of said coarsely ground grain with an equal part of water and kneading together for about one half hour;

C. Allowing said dough to sit for about 15 minutes;

D. Separating the starch and gluten in said dough by subjecting said dough to the combined action of a water wash and mechanical shearing of the viscous gluten strands formed in the dough to expose additional starch to the wash streams;

E. Collecting the starch from said wash waters separately from the viscous gluten;

F. Separating the bran, fiber and germ from said starch; and

G. Separately collecting and drying said gluten from which substantially all of the starch, germ, bran and fiber have been removed to obtain a vital gluten product containing at least 75% protein.

3,857,988

METHOD OF THAWING DEEP-FROZEN MEAT PRODUCTS

Jens-Lauge Bolund Jensen, Fyrrevej 18; Per Julius Leth Moller, Haraldsborgvej 1, and Anna Birthe Mortensen, Klevekaer 11, Svogerslev, all of DK-4000 Roskilde, Denmark

Filed Mar. 31, 1972, Ser. No. 240,263

Claims priority, application Denmark, Apr. 2, 1971, 1590/71

Int. Cl. A23b *1/06*

U.S. Cl. 426—506 **2 Claims**

1. A method of thawing deep-frozen raw meat products, comprising storing the frozen raw meat products in a closed space during a first thawing period; treating the stored products with air having a temperature of above 35℃ and below 60℃ and having a relative moisture content as close as possible to 100% by circulating the air evenly within said space at a rate of about 2 to 3 m/sec, until the surface of the stored products reaches a temperature approaching 30°–35℃, whereupon the first thawing period is discontinued; and immediately subjecting the stored products having a surface temperature of 30°–35℃ to a second thawing period by circulating air at a temperature of 7°–13℃ and a relative moisture content of about 90% at such a rate that within 15 to 20 hours a sufficient amount of heat is supplied to the meat products subjected to said second thawing period to bring their temperature after complete equalization and without further supply of heat to the desired end temperature, whereupon the heat treatment is discontinued.

3,857,989

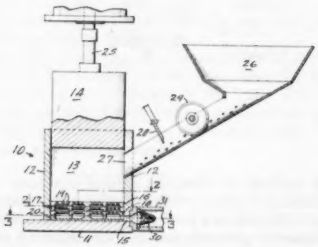
METHOD AND APPARATUS FOR PREPARING AN ANIMAL FOOD PRODUCT

David P. King, Erie, Mich., assignor to King-Bartolotta, Inc., Erie, Mich.

Filed Sept. 27, 1973, Ser. No. 401,546

Int. Cl. A22c *17/00*

U.S. Cl. 426—518 **10 Claims**



1. A method of preparing an animal food product comprising the steps of:

1. placing a mass animal flesh and bone material within a chamber between a plunger, axially movable within said

chamber and perforated extractor means adjacent an outlet end of said chamber;

2. advancing said plunger against the mass under a pressure of not less than 120,000 psi to force the flesh and bones of the mass through said perforated extractor means to reduce the bones to a size and consistency indistinguishable from the remainder of the resultant food product which emerges from said extractor plates; and
3. collecting the resultant food product from said outlet end of said chamber.

3,857,990

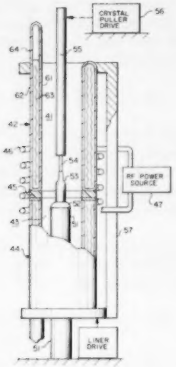
HEAT PIPE FURNACE

Jacques Steininger, Lexington, and Thomas B. Reed, Concord, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 241,597, April 6, 1972. This application June 27, 1973, Ser. No. 374,223

Int. Cl. H05b *3/66*; **F28d** *15/00*

U.S. Cl. 13—22 **6 Claims**



1. In a furnace, for providing at least two zones of different constant uniform temperature and a high temperature gradient therebetween, comprising,

a first and second hollow-walled sealed container defining a first and second zone in their interiors,

a wick inside the hollow wall extending from one end thereof to the other end thereof,

a liquid inside the hollow wall impregnating the wick,

said first and second containers being in axial alignment and having an end of each in proximity to one another,

an insulating spacer between said first and second container ends,

means for heating the liquid in both zones with a heater located adjacent the proximate ends of both hollow walls, the liquids in the first and second hollow walls are different, having different temperatures of vaporization selected to provide different zone temperatures,

the liquids absorb heat from the heater, evaporate, and fill the inside of the hollow walls with vapor at said constant different temperatures and the vapor condenses, gives up heat to the wall, flows through the wick and is heated again to repeat the cycle,

whereby a high thermal gradient occurs across the insulating spacer between the first and second zones.

3,857,991

EARTH RESISTANCE-REDUCING AGENT AND METHOD OF REDUCING EARTH RESISTANCE BY USE OF SAME

Einosuke Higashimura, Tokyo; Yukihiko Sekimoto, Sitama, and Eizi Hatabu, Tokyo, all of Japan, assignors to Nitto Chemical Industry Co., Ltd. and Mitsubishi Rayon Co., Ltd., both of Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,658

Claims priority, application Japan, Dec. 29, 1970, 46-12805; Nov. 5, 1970, 45-96844

Int. Cl. H01r *3/06*; **H01b** *1/06*

U.S. Cl. 174—6 **4 Claims**

1. A process for reducing the earth resistance in the soil surrounding an earth electrode which comprises treating the soil surrounding said earth electrode with an earth resistance-reducing agent consisting essentially of an aqueous solution of:

i. 1 to 30% by weight of at least one monomer selected from the group consisting of acrylamide, ammonium acrylate, sodium acrylate and sodium methacrylate;

ii. 0.05 to 5% by weight of at least one water-soluble cross-linking monomer selected from the group consisting of methylenebisacrylamide and 1,3-di(acrylamidomethyl)-2-imidazolidone;

iii. at least 0.5% by weight to the saturation amount of at least one electrolyte selected from the group consisting of sodium chloride and ammonium sulfate;

iv. 0.1 to 3% by weight of each of an oxidizing component selected from the group consisting of ammonium persulfate, potassium persulfate, sodium persulfate and hydrogen peroxide and a reducing component selected from the group consisting of dimethylaminopropionitrile, triethanolamine, sodium thiosulfate and allylthiourea of a redox catalyst; and

v. 0.01 to 5% by weight, based on the weight of the components (i), (ii), (iii), and (iv), of at least one water-soluble polymer selected from the group consisting of hydroxyethylcellulose, polyacrylamide, polyethylene oxide, and a copolymer of at least two monomers selected from the group consisting of acrylamide, methacrylamide and sodium acrylate, potassium acrylate, ammonium acrylate, sodium methacrylate, potassium methacrylate, ammonium methacrylate, and methyl acrylate.

3,857,992

HOUSING ASSEMBLY FOR OIL COOLED ELECTRICAL APPARATUS

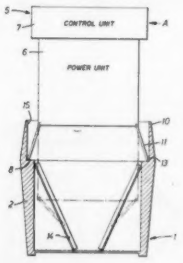
Kjeld Lehmann, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 12, 1973, Ser. No. 415,116

Claims priority, application Germany, Nov. 14, 1972, 2255688

Int. Cl. H05k *5/00*

U.S. Cl. 174—52 R **3 Claims**

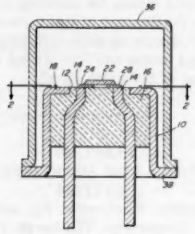


1. Electrical apparatus comprising an upwardly open casing having an internal shoulder, an assembly located within said casing and movable from a position fully inserted in said casing to a position withdrawn from said casing, comprising an oil cooled lower unit and an upper control unit, said upper unit engaging said casing shoulder when said assembly is in its fully inserted position in said casing, internal guide means in said casing, strut means having ends connected to the lower end of said lower unit and having portions thereof engageable with said guide means, said portions of said strut means being engageable with said internal shoulder of said casing when said assembly is in said position withdrawn from said casing.

3,857,993
BEAM LEAD SEMICONDUCTOR PACKAGE

Philip L. Gregory, Los Altos, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 21, 1973, Ser. No. 418,018
Int. Cl. H05k *5/00*
U.S. Cl. 174—52 S **7 Claims**



1. A semiconductor device package comprising:

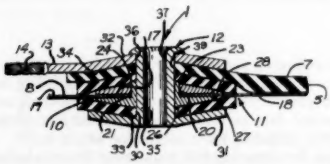
a metal header structure having a surface with an aperture therein; and

a plurality of leads supported in said aperture and insulated from said structure with one end of each of said leads being substantially coplanar with said surface, wherein said header structure supports a semiconductor device haing a plurality of beam leads extending outwardly therefrom, the outwardly extending ends of said beam leads being bonded respectively to each of said lead ends and to said surface.

3,857,994
NON-CORROSIVE CABLE SHIELD BOND

Dory J. Neale, Sr., St. Petersburg, Fla., assignor to The National Telephone Supply Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 349,260, April 9, 1973, abandoned, which is a continuation-in-part of Ser. No. 253,176, May 15, 1972, abandoned. This application Jan. 7, 1974, Ser. No. 431,549
Int. Cl. H02g *15/02*; **H01r** *3/06*, *5/06*
U.S. Cl. 174—78 **18 Claims**



1. A shield connector for a joint of electrical cable, such cable having an outer protective sheath and an inner metal covering in surrounding relation to the electrical conductors forming a shield therefor, comprising:

a. electrically conductive means in electrical contact with a surface portion of a metal shield of a cable;

b. resilient means in opposed relation and on opposite sides of said metal shield and conductive means in covering relation thereto, said resilient means having peripheral portions in sealing engagement radially outwardly of said conductive means thereby preventing entry of air and moisture to said conductive means;

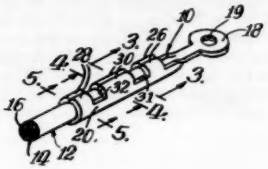
c. means engaging said resilient means operative to hold same in sealing relation to the conductive means and metal shield; and

d. means extending through at least one of said resilient means, in sealing engagement therewith, and having electrical contact with said electrically conductive means and being electrically connected to a shield continuity of the cable.

3,857,995
ELECTRICAL CONNECTOR

Charles Thomas Wyrick, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 24, 1972, Ser. No. 309,078
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 C **19 Claims**

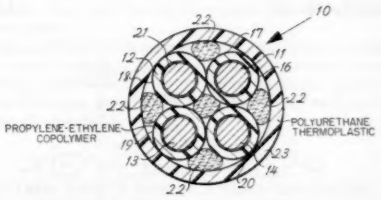


1. An electrical connector for use with an insulated wire, comprising a ferrule portion having a wire engaging surface and spaced side edges, a rib on said surface and extending transversely with respect to said side edges and the longitudinal axis of said ferrule portion, and a terminal portion adapted to be connected to an electrical conductor, said ferrule portion together with said rib being adapted to be crimped into a generally cylindrical shape around the wire so that said side edges of said ferrule portion are adjacent each other, said rib being generally circular in cross section to penetrate and extrude insulation on the wire and to make good electrical contact with the wire without cutting into the wire as the ferrule portion and rib are crimped around the wire, and said rib being a separate piece secured to said ferrule portion.

3,857,996
FLEXIBLE POWER CABLE

Theodore E. Hansen, and Floyd A. Wilson, both of Marion, Ind., assignors to The Anaconda Company, New York, N.Y.

Filed June 18, 1973, Ser. No. 371,320
Int. Cl. H01b *7/02*
U.S. Cl. 174—113 R **4 Claims**



1. A flexible power cable comprising, in combination,

A. a plurality of copper conductors, each being stranded of a plurality of wires,

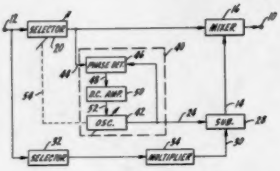
B. a heavy wall of propylene-ethylene copolymer insulation having a yield strength of at least 3,700 pounds per square inch and a dilatometer melting point of at least 155°C covering each of said conductors, and

C. a polyurethane thermoplastic jacket surrounding said conductors having said walls of insulation.

3,857,997
CABLE CONVERTER WITH PHASE LOCK LOOP TECHNIQUES

Pieter Den Toonder, Dordrecht, Netherlands, assignor to Oak Industries, Inc., Crystal Lake, Ill.

Filed Mar. 8, 1973, Ser. No. 339,095
Int. Cl. H04n 1/44
U.S. Cl. 178—5.1 **13 Claims**



1. In a cable television converter having channel selection means associated with a system that transmits a pilot signal which is harmonically related to the desired IF signal along with the video and sound frequency carrier received at the input of said converter for each TV channel,

phase locked loop means (PLLM) connected at the input of said converter for producing an output signal locked to the carrier frequency for the selected channel,

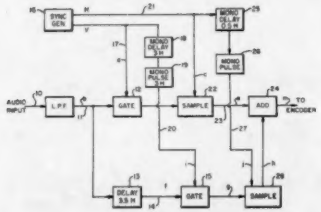
pilot signal conversion means (PSCM) having two inputs, the first of said inputs being connected to the input of said converter, the second of said inputs being connected to the output signal of said PLLM, said PSCM producing an output signal which is the difference between the IF frequency and the output signal of said PLLM,

and combining means having two inputs, the first of said inputs being connected to the modulated carrier frequency, the second of said inputs being connected to the output signal of said PSCM, said combining means processing said input signals to produce a constant IF output signal.

3,857,998
AUDIO CODING SYSTEM FOR EDUCATIONAL TV

James W. H. Justice, Murrysville, and Marcus H. Uhler, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,158
Int. Cl. H04m 7/08
U.S. Cl. 178—5.6 **16 Claims**



10. An apparatus for transmitting an audio signal on a subcarrier in a manner conventionally used to transmit color video signals produced at a horizontal scan rate of a television picture field between vertical blanking intervals, said apparatus comprising:

first means for producing samplings of said audio signal at a predetermined rate and at times other than during the vertical sync period of said vertical blanking interval;

second means for producing samplings of said audio signal occurring during said vertical sync period at said predetermined rate;

means for effecting a time delay to the samplings of the audio signal from said second means;

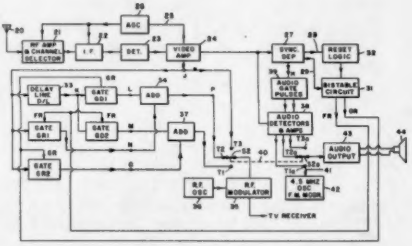
the delay by said means for effecting a time delay being greater than the duration of said vertical sync period; and

means for producing an audio sampling summation signal from said first means and said second means for producing samplings of the audio signal.

3,857,999
CONVERTER FOR A LINE SHARED EDUCATIONAL TV SYSTEM

James W. H. Justice, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,189
Int. Cl. H04n 7/08
U.S. Cl. 178—5.6 **11 Claims**



1. A converter for receiving a plurality of *n*-separate video pictures in the form of a plurality of lines including the *n*th line of said plurality of pictures commencing from a different preselected line in each of said plurality of pictures, said converter including the combination of:

means for detecting said plurality of lines including the nth line of said plurality of pictures from a radio frequency carrier signal;

means for selecting the nth line from said plurality of lines commencing at a preselected line so that the lines are selected from one of said plurality of pictures;

means for delaying said selected lines for substantially $n-1$ line time periods including a delay line having a bandwidth less than the bandwidth of said video pictures;

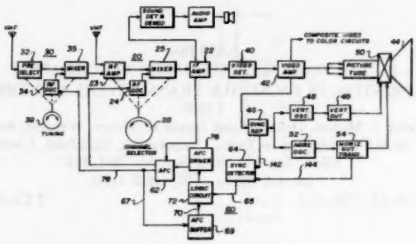
means for combining the selected lines which are undelayed with those which are delayed to define a selected one of said plurality of pictures and in a manner that an undelayed line is followed by a corresponding delayed line; and

means for modulating the selected video signals defined by the combined delayed and undelayed lines onto a radio frequency carrier signal thereby forming a single modulated radio frequency carrier signal for use as an antenna input signal to a conventional television receiver to display the selected one of said plurality of pictures.

3,858,000
EXTENDED RANGE AFC SYSTEM

Kenneth A. Merriweather, Evanston, and Harold J. Benzuly, Highland Park, both of Ill., assignors to Warwick Electronics, Inc., Chicago, Ill.

Filed Dec. 4, 1972, Ser. No. 312,081
Int. Cl. H04n *7/06*
U.S. Cl. 178—5.8 AF **12 Claims**



1. In a television receiver having tunable means for converting a composite television signal including first and second modulated carriers and sync components into an intermediate frequency signal, an automatic frequency control system operative to respond to frequency deviations in the intermediate frequency signal comprising:

correction means responsive to frequency deviations of the first IF carrier from a fixed intermediate frequency and operative for retuning said tunable means to correct for said frequency deviations, said correction means being ineffective for frequency deviations of said first IF carrier outside of a predetermined pull-in range, carrier indicator means coupled to said correction means for providing a positive indication signal when only said second IF carrier appears within a first portion of said pull-in range;

sync detector means for detecting the absence of sync components, thereby indicating the absence of said first IF carrier from said pull-in range; and

extended range means coupled to said sync detector means and said carrier indicator means for extending the pull-in range of said correction means in response to both the detected absence of said first carrier and the detected presence of said second carrier within said first portion of said pull-in range.

3,858,001
STEREOSCOPIC DISPLAY SYSTEM

Ulrich Bonne, Hopkins, Minn., assignor to Honeywell, Inc, Minneapolis, Minn.

Filed May 11, 1973, Ser. No. 359,574
Int. Cl. G02f *1/26;* **H04n** *9/58*
U.S. Cl. 178—6.5 **17 Claims**

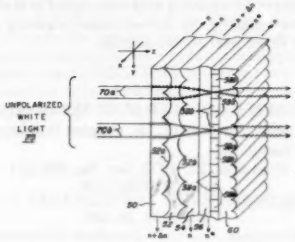
1. A stereoscopic display system for providing stereoscopic images on a common screen which are viewable by viewers at random positions within a prescribed viewing area, the stereoscopic display system comprising:

image generating means for sequentially projecting on the common screen first and second images of a scene to produce a presentation in which the first and second images are shown alternately for substantially equal time periods;

controllable polarizing means proximate the image generating means for providing the first images with a first polarization direction and for providing the second images with a second polarization direction, the controllable polarizing means comprising:

first layer means including a first interface, the first interface being substantially nonfractive of a first portion of the light rays having one vibration azimuth but refractive of a second portion of the light rays having another vibration azimuth, the first interface being bounded on at least one side by a birefringent layer having one index of refraction substantially equal to an index of refraction of a layer at the opposite side thereof and a second index of refraction differing therefrom, the first interface being configurated to refract the second portion of the light rays into a plurality of second spaced apart components converging toward areas of substantial focus;

second layer means including a second interface, the second interface being substantially nonrefractive of the second portion of the light rays but refractive of the first portion thereof, the second interface being bounded on at least one side by a birefringent layer having one index of refraction substantially equal to an index of refraction of a layer at the opposite side thereof and a second index of refraction differing therefrom, the second interface being configurated to refract the first portion of the light rays into a plurality of first spaced apart components converging toward substantial focus at areas which are laterally interposi-



tioned between the areas of focus of the second spaced apart components; and

third layer means for individually controlling the vibration azimuths of the first and second spaced apart components to correspond to the first polarization direction when the first image is projected by the image generating means and to correspond to the second polarization direction when the second image is projected by the image generating means; and

synchronizing means for synchronizing the operation of the image generating means and the controllable polarizing means;

first analyzer means adapted to be positioned proximate a first eye of a viewer, the first analyzer means being oriented to pass light having the first polarization direction and to block light having the second polarization direction; and

second analyzer means adapted to be positioned proximate a second eye of a viewer, the second analyzer means being oriented to pass light having the second polarization direction and to block light having the first polarization direction.

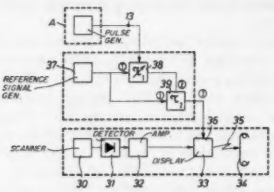
3,858,002
CONTROL DEVICE FOR A CAMERA FOR TAKING AERIAL PHOTOGRAPHS BY MONOLINE SCANNING

Gerard Eugene Baillet, Choisy-Le-Roi, and Andre Marcel Chabonat, Versailles, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Apr. 27, 1973, Ser. No. 355,038
Int. Cl. H04n *5/88*
U.S. Cl. 178—7.2 **4 Claims**

1. A control device for a camera taking aerial photographs by monoline scanning comprising a reflector rotatable with respect to a reference plane of an aircraft carrying the camera, said control device comprising a gyrometer connected to the

structure of the aircraft and furnishing a voltage corresponding to the angular velocity of the aircraft in its rolling motion, and an electronic system for integrating with respect to time the value of the voltage furnished by the gyrometer, means for producing a first impulse signal at the moment when the plane of the mirror is coincident with the reference plane, means for



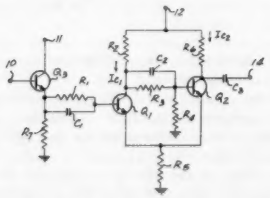
producing a second signal starting at each occurence of said first impulse signal and which is modulated in duration by the voltage from said integrating device, means for producing at the end of said second signal a third signal of constant duration, and means for applying said third signal to the control of the effective scanning, by the monoline scanning device, of the ground flown over by the aircraft.

3,858,003

EMITTER COUPLED SYNC SEPARATOR

John A. Scoubis, Forest Park, Ill., assignor to Admiral Corporation, Chicago, Ill.

Filed Sept. 22, 1972, Ser. No. 291,224
Int. Cl. HO4n *5/08*
U.S. Cl. 178—7.35 **3 Claims**



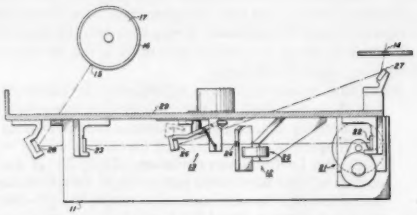
1. A television receiver producing a composite video signal and including a sync separator circuit comprising: first and second transistors; an output terminal coupled to another electrode of the second transistor; a control electrode of said second transistor coupled to another electrode of said first transistor; an input terminal receiving said composite video signal, means for biasing connected to said first and second transistors such that when said composite video signal is applied to said input terminal said first transistor is biased to conduction during the sync pulse and the second transistor is biased to cut off when the first transistor conducts and conducts when the first transistor is biased to cut off, a first capacitor and a first resistor connected in parallel between said input terminal and the control electrode of said first transistor and the time constant of said first resistor and capacitor determining the amplitude of said sync pulse at which said first transistor is biased to conduction, a second capacitor and a second resistor connected in parallel between the control electrode of said second transistor and said other electrode of said first transistor, third electrodes of said first and second transistors are connected together, said third electrodes are emitters, said control electrodes are bases and said other electrodes are collectors, said means for biasing includes a bias source, a third resistor connected between the other electrode of said first transistor and one side of said bias source, a fourth resistor connected between the other electrode of said second transistor and said bias source, the impedance of said fourth resistor is greater than that of said third resistor, said means for biasing further includes a fifth resistor connected between the control electrode of said second transistor and the second side of said bias source, said means for biasing further includes a sixth resistor connected between said third electrodes and said second side of said bias source, a third capacitor connected between said output terminal and the other electrode of said second transistor and wherein said first transistor is biased to start conduction in the range between 40–60 percent of the amplitude of the sync pulse.

3,858,004

FILTER FOR SELECTIVE SPEED XEROGRAPHIC PRINTING IN FACSIMILE TRANSCEIVERS AND THE LIKE

Peter J. Mason, Ontario, and David R. Shuey, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 17, 1973, Ser. No. 361,386
Int. Cl. H04n *1/30*; **G02f** *1/30*
U.S. Cl. 178—7.6 **2 Claims**



1. In a facsimile transceiver which is selectively operable in a transmit mode for scanning of subject copy and in a receive mode for printing at any one of several different rates on a xerographic photoreceptor, the combination comprising

a laser for supplying a beam of substantially collimated light of a predetermined cross-sectional area,

an optical path for said light beam, and

a filtering means for adjustably attenuating said light beam to provide a substantially unattenuated light beam for scanning while said transceiver is operating in the transmit mode and an attenuated light beam having a power level per unit area on said photoreceptor within a predetermined range while said transceiver is operating in its receive mode, said filtering means including

a rotatable member with a predetermined axis of rotation, a plurality of filter holders mounted on said member at a predetermined radial distance from said axis and at spaced angular intervals about said axis,

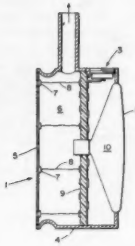
a plurality of filter elements each having an area of substantially uniform optical density larger than the cross-sectional area of said light beam, each of said filter elements having a different optical density and mounted on a respective one of said holders, one of said elements being substantially transparent, and

drive means for selectively indexing said member to bring a respective one of said filter elements into alignment with said optical path for each of said printing rates when said transceiver is operating in its receive mode and said substantially transparent filter element into alignment with said optical path when said transceiver is operating in its transmit mode.

3,858,005
STETHOSCOPE WITH DISPLAY

Robert A. Marshall, 132 Sherman St., Cambridge, Mass. 02138, and Theodore E. Spielburg, 27 Lexington Rd., Wellesley, Mass. 02181

Filed Nov. 15, 1973, Ser. No. 416,024
Int. Cl. A61b *7/02*
U.S. Cl. 179—1 ST **1 Claim**



1. An improved stethoscope comprising:

a. a chest piece having a body containing:

1. a pick up section;
2. an amplifier section; and
3. a display section;

in which the pick up section comprises a diaphragm or bell mounted on the body and adapted to pick up the vibration of heart or other bodily sounds and a transmission space containing a vibration transmitting medium and means to pick up the vibration of heart sounds and convert them to an electrical signal and transmit them to the amplifier section; and

in which the amplifier section is spaced from the diaphragm or bell and comprises miniaturized circuitry adapted to receive the transmissions from the pick up section, amplify and transmit signals to the display section; and

in which the display section comprises a miniaturized cathode ray tube for receiving and displaying a signal from the amplifier section, the display section being located on the stethoscope proximate to the body;

b. a tube assembly comprising a hollow tube communicating with the transmission space and dividing to form a pair of tubes adapted to reach the ears of the stethoscope user and to transmit the vibration of heart or other bodily sounds.

c. an integral power source for operating the amplifier and the cathode ray tube.

3,858,006
AUTOMATIC TELEPHONE ANSWERING APPARATUS

Tadashi Tomita, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sept. 5, 1972, Ser. No. 286,239
Claims priority, application Japan, Sept. 4, 1971, 46-68307
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 E **10 Claims**

1. An automatic telephone answering apparatus comprising:

starting circuit means adapted to start its operation by a call signal;

first timer circuit means adapted to be actuated through said starting circuit means and determine the whole operating time of the apparatus;

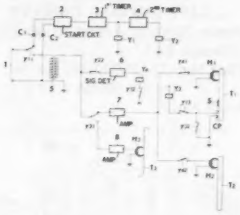
second timer circuit means adapted to operate at the conclusion of an initial delay time following the actuation of said first timer circuit;

signal detecting circuit means adapted to operate when a specific signal is transmitted by a caller within the predetermined period after said first timer circuit has been operated and before the second timer circuit has started its operation;

message sending circuit means having a message sending track actuable for sending out a special message to the specific signal transmitting caller;

answering means having a further message sending track for sending out a standard answering message to callers not transmitting said specific signal;

track switching means responsive to said signal detecting circuit means and comprising relay means having first and

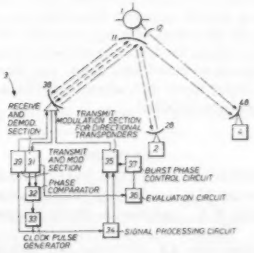


second alternately actuable contacts, one of said contacts being connected to said message sending circuit means for sending out the special message therefrom only when said signal detecting circuit means has been operated, and the other of said contacts being connected to said answering means for sending out said standard answering message upon receipt of a call not operating said signal detecting circuit means.

3,858,007
CIRCUIT ARRANGEMENT FOR SYNCHRONIZING PULSE BURSTS

Horst Ganssmantel, Backnang, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt, Germany

Filed Jan. 23, 1973, Ser. No. 326,042
Claims priority, application Germany, Jan. 26, 1972, 2203575
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **3 Claims**



1. In a circuit arrangement, for synchronizing pulse bursts and pulse frames in the transmission of pulse coded data between ground stations via directional transponders of a communication satellite using time division multiplexing, the satellite having spot beam directional antennas covering at least two spatially separated ground stations each disposed within the radiation range and pattern of a respective one of the directional antennas, the improvement comprising:

main transponder means in said satellite; an additional antenna having a radiation range and pattern which covers at least the radiation ranges and patterns of said directional antennas, said additional antenna being coupled to said main transponder means for supplying received signals from said ground stations thereto and for radiating signals received therefrom, including synchronizing infor-

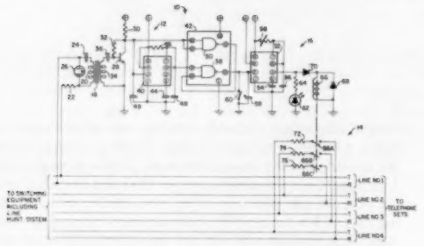
mation signals to said ground stations; and means at each said ground station responsive to received synchronizing information signals and to its own received distinctive pulse bursts for controlling the repetition rate and phase of its distinctive pulse bursts; whereby all said stations participate in the synchronous bit timing operation within the range of the antennas with a given time format.

3,858,008

LINE BUSYING CIRCUIT

Matthew J. Remec, North Riverside, Ill., assignor to Phone-Aid Co., Inc., Chicago, Ill.

Filed May 21, 1973, Ser. No. 361,952
Int. Cl. H04m *1/00*
U.S. Cl. 179—18 AB **6 Claims**



1. A line busying circuit for use with a plurality of sequential telephone lines associated with a telephone system having line hunt equipment, said circuit comprising:

sensing means coupled to a sequentially first line for sensing use of said first line;

a false busy circuit connected to at least one line subsequent to said first line;

means for normally maintaining said subsequent line in an undisturbed condition; and

control means coupled between said sensing means and said false busy circuit and operable in response to the sensing of use of said first line for operating said false busy circuit to place said subsequent line in a busy condition;

said sensing means including first detecting means for detecting the inception of a signal on the first line, second detecting means for detecting the persistance of the signal after a predetermined time delay, and means for providing an output signal only when inception and persistance of a signal are detected.

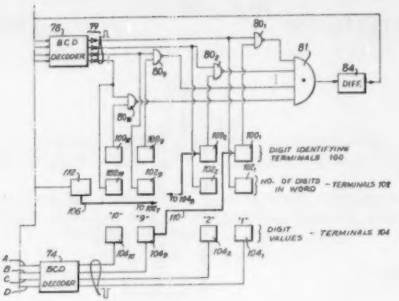
3,858,009

ELECTRONIC AUTOMATIC DIALING APPARATUS

John Mickowski, Maplewood, N.J., and Ronald G. Caravello, Massapequa, N.Y., assignors to Porta Systems Corp., Roslyn, N.Y.

Filed Apr. 13, 1973, Ser. No. 350,903
Int. Cl. H04n *1/42*
U.S. Cl. 179—90 BD **11 Claims**

1. In combination in an automatic dialer apparatus, a gated dial pulse oscillator, a dial pulse counter for counting the output pulses of said oscillator, first state decoder means connected to said dial pulse counter, a digit counter, second state decoder means connected to the output of said digit counter, a wire programmable cross connection field comprising a first plurality of terminals connected to said first decoder means and a second plurality of terminals connected to said second decoder means and a third plurality of terminals for establishing a number of dialing digits to be effected by said automatic dialer apparatus, control means connected to said first and second terminal pluralities for selectively clearing said dial pulse counter and advancing said digit counter, bridging impedance means for signalling an off-hook condition, controlled switching means for bridging a tip and ring conductor pair with said bridging impedance means, and means responsive to the output of said gated oscillator for actuating said controlled switching means.

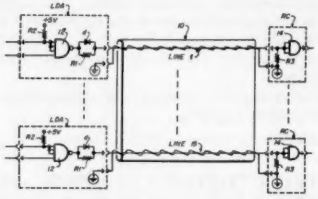


3,858,010

INTERMEDIATE COMMUNICATION LINK FOR USE IN ELECTRONIC SYSTEMS

Carlos S. Higashide, Elk Grove Village, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 6, 1973, Ser. No. 348,544
Int. Cl. H04m *1/74*
U.S. Cl. 179—174 **6 Claims**



1. An intermediate communication link for digital communication between electronic frames within a communication system comprising:

a transmission cable comprised of a plurality of two wire transmission lines bundled together in a jacket;

a line driver and a receiver coupled respectively to the opposite ends of one said wires of each of said transmission lines;

each of said line drivers comprising gate means having a parallel diode resistor network in series with the output thereof;

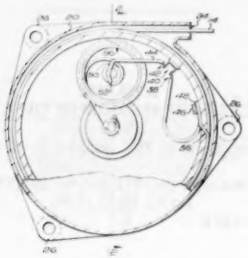
each of said receivers comprising gate means having the inputs thereof tied to ground via resistance means; and

the opposite ends of the other wire of each of said transmission lines being grounded.

3,858,011
ELECTRICAL APPARATUS

Keith Thomas Salvin, and David Silvester Lane, both of Sheffield, England, assignors to Strawson Hydraulics (Consultants) Limited, Sheffield, England

Filed Sept. 4, 1973, Ser. No. 394,137
Int. Cl. H02g *11/00*
U.S. Cl. 191—12.2 R **6 Claims**



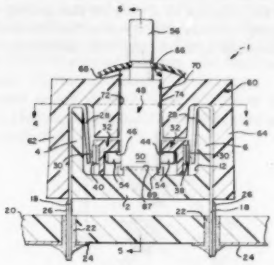
1. An electric cable reeling drum comprising a main drum on which an electric cable is to be wound; spring means acting on said main drum to take up slack in the electric cable; an auxiliary drum mounted eccentrically within said main drum; windings of a connecting wire carried on said auxiliary drum for connecting an end of the electric cable wound on the main drum to fixed electrical apparatus; and a fixed main bobbin at the axis of the main drum to which the connecting wire extends tangentially from the auxiliary drum whereby said connecting wire is wound and paid off the main bobbin according to the direction of rotation of the main drum.

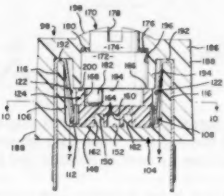
3,858,012
OPERATING MEANS FOR HERMETICALLY SEALED DOUBLE-THROW DOUBLE-POLE SWITCH

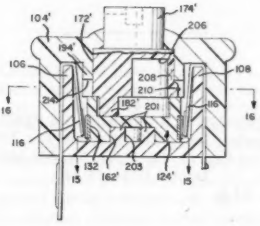
Joseph LaRue Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 364,779, May 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 325,480, Jan. 22, 1973, abandoned. This application Feb. 27, 1974, Ser. No. 446,260
Int. Cl. H01h *15/06, 3/32*
U.S. Cl. 200—16 D **15 Claims**

1. A switch comprising: a base of dielectric material, a cover of dielectric material overlying said base, said base and said cover together comprising a housing, at least two adjacent electrically conducting springs on each opposed side of said base, said springs having first portions projecting in depending relationship from said base to provide electrical terminals protruding externally of said base for making electrical connections externally of said housing, said springs having second portions in opposed spaced relationship in said housing, a carriage slidably received for sliding displacement in said housing, said carriage being received between each opposed pair of second portions of said springs and having a first and a second conductor strip on opposed sides of said carriage, said carriage being displaceable to a first position and having a first conductor strip electrically engaging two adjacent springs to complete a first electrical circuit therebetween, said carriage being displaceable to said first position and having said second conductor strip electrically engaging two adjacent springs to complete a second electrical circuit therebetween, said carriage being displaceable in said housing to a second position to disengage said first conductor strip from one of said springs and thereby interrupt said first electrical circuit, and to disengage said second conductor strip from another of said springs and thereby interrupt said second circuit, and a lever on said carriage protruding externally of said housing for receiving applied forces thereto for pivoting said lever and for displacing said carriage to either of said first or said second positions.







3,858,013
YARN SENSING DEVICE

Edgar Parent, St. Jean, Quebec, Canada, assignor to Celanese Canada Limited, Montreal, Quebec, Canada

Filed Mar. 2, 1973, Ser. No. 337,602
Int. Cl. B65h *25/14*
U.S. Cl. 200—61.13 **3 Claims**

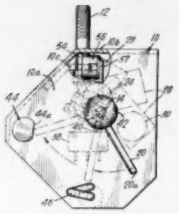
1. A yarn sensing device adapted to exert a light tension and little friction on a yarn, said device comprising:

a. a frame,
b. a substantially frictionless pivot mounted through said frame,
c. a yarn sensing arm mounted on said pivot,
d. a cam mounted on said pivot positioned with respect to said sensing arm,
e. a switch mounted on said frame and operatively connected to said cam and said arm,
f. a tubular container mounted on said cam with respect to said arm,
g. a heavy ball shaped load confined and displaceable within said container, so that the load is off center of said pivot

and preferentially rests on said pivot and the container is upwardly inclined when the sensing arm is normally touching a yarn, and said container is downwardly inclined in the absence of a yarn on the sensing arm,

h. a first stopper for said arm to rest in the absence of a yarn,

i. a ferro magnetic arm rotating with said pivot,



j. a magnetic force to lock said ferromagnetic arm and thereby said sensing arm when said sensing arm is displaced away from its normal position and from said first stopper,

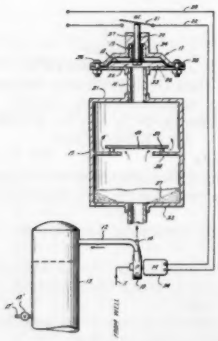
k. said sensing arm being provided with a gripping portion adapted to cooperate with said first stopper.

3,858,014

GAUGE AND SWITCH DIAPHRAGM PROTECTOR

George W. Hughes, 2601 Mills, Houston, Tex. 77026

Filed Oct. 19, 1973, Ser. No. 408,160
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 R 4 Claims



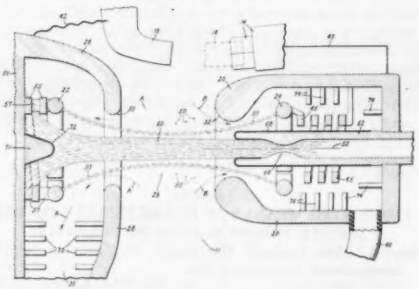
1. In a means for diverting sand in a fluid conduit to prevent an accumulation beneath the diaphragm of an electrical switch in connection therewith, a diaphragm operated switch mechanism, a pressure line leading from a source of pressure to said mechanism for the conduct of fluid containing sand, an expansion chamber in said line between said source of pressure and said diaphragm operated mechanism, baffle means in said chamber across the flow line of fluid therethrough diverting sand in said fluid to the outside walls of said chamber.

3,858,015

ELECTRIC CIRCUIT BREAKER OF THE GAS BLAST TYPE

Don W. Deno, Berwyn, Pa., assignor to General Electric Company

Filed Sept. 15, 1972, Ser. No. 289,579
Int. Cl. H01h *33/86*
U.S. Cl. 200—148 B 8 Claims



1. A gas blast circuit breaker comprising:

a. a first electrode of a generally annular configuration and a second electrode spaced therefrom,

b. first and second spaced-apart nozzles primarily of metal electrically connected to said first and second electrodes, respectively,

c. each of said nozzles having an orifice opening positioned between said electrodes,

d. means for establishing between said electrodes an arc that has its opposed terminals on said electrodes and its column extending through said orifice openings,

e. means for causing two streams of gas to flow in generally opposite directions from the space between said nozzles through said orifice openings, one stream flowing past said first electrode and the other flowing past said second electrode,

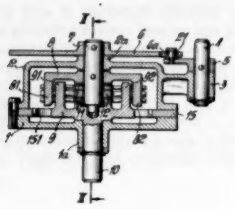
f. magnetic means for forcing the arc terminal on said first electrode to move along said first electrode in a generally circular path so as to develop a generally hollow arc column in the region adjacent said first electrode,

g. and means for directing along the longitudinal axis of said hollow arc column a jet of gas flowing from the region of said first electrode toward said second electrode.

3,858,016
SPRING-LOADED SNAP-ACTION STEPPING-SWITCH-OPERATING MECHANISM

Ernst Baumgartner, Brandlbergerstrasse 88, 84 Regensburg, Germany

Filed Sept. 17, 1973, Ser. No. 398,128
Claims priority, application Germany, Oct. 13, 1972, 2250260
Int. Cl. H01h *3/40*
U.S. Cl. 200—153 P **12 Claims**



1. A spring-loaded snap-action stepping-switch-operating mechanism including

a. a pair of spring-supporting levers (**11, 12**) arranged crosswise, pivotable about a common shaft and each having a pair of lever arms;

b. a pair of springs (**13,14**) each affixed with the ends thereof to one of (**13, 14**) pair of lever arms of each of said pair of spring-supporting levers (**11, 12**);

c. a pivotable spring-loading crankshaft (**8**) operable by a Geneva gear drive (**4, 5, 6**) and having axial extensions (**81, 82**) cooperating with one of said pair of spring-supporting levers (**11, 12**) for pivoting said one of said pair of spring-supporting levers to load said pair of springs (**13, 14**);

d. a pivotable stepping crankshaft (**9**) having axial extensions (**91, 92**) cooperating with the other of said pair of spring-supporting levers (**11, 12**) to cause said pair of springs (**13, 14**) when expanding to impart a pivotal motion to said stepping crankshaft;

e. a latch mechanism (**15, 16, 17, 19, 20**) for latching said stepping crankshaft (**9**) in position against the bias of said pair of springs (**11, 12**); and

f. means operable by said spring-winding crankshaft (**8**) for unlatching said latch mechanism (**15, 16, 17, 19, 20**) to allow said pair of springs to impart said pivotal motion to said stepping crankshaft (**9**).

3,858,017
PERIPHERAL CAM ACTUATING A PLURALITY OF CONTACT BLADES

Marcello Bertozzi, No. 47, Via Brighindi, and Mario Chioffi, No. 84, Via Marittima 1, both of Frosinone, Italy

Filed Dec. 3, 1973, Ser. No. 420,903
Claims priority, application Italy, July 12, 1973, 51427/73
Int. Cl. H01h *19/62*
U.S. Cl. 200—153 LB **3 Claims**

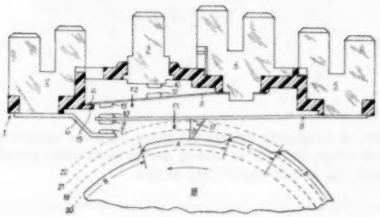
1. Means selectively activating a plurality of electrical circuits comprising:

a. a rotatable cam, said cam having at least four successive steps,

b. at least four electrical terminals carried by an electrically insulative base in a line, spaced from and in alignment with the rotational direction of said cam,

c. a first spring contact blade affixed at one end to a first electrical terminal at an end of said line, at least one electrical contact carried at a free end of said blade, and a cam follower carried between said fixed and free ends, said cam follower responsive to said cam,

d. a second spring contact blade affixed at one end to a second electrical terminal disposed next to said first electrical terminal,



e. means carried by said base engaging a free end of said second spring contact blade to limit its travel,

f. at least one electrical contact carried by said second spring contact blade between said fixed and free ends,

g. a first stationary electrical contact carried by a third electrical terminal disposed next to said second electrical terminal cooperating with said electrical contact carried by said second spring contact blade, and

h. a second stationary electrical contact carried by a fourth electrical terminal disposed at another end of said line and cooperating with said electrical contact carried by said first spring contact blade.

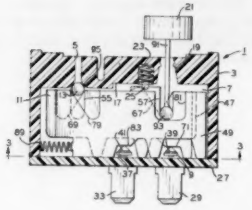
3,858,018
ELECTRICAL SWITCH WITH REMOVABLE DRIVING MEANS

Joseph M. Walley, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 22, 1974, Ser. No. 444,884
Int. Cl. H01h *9/24, 27/00*
U.S. Cl. 200—153 LA **16 Claims**

1. An electrical switch comprising a housing, means in the housing for access into an interior portion thereof, means movable in the housing for completing a circuit therethrough, means for actuating the circuit completing means and shiftable between at least two positions in the housing, means engaged with the actuating means for generally closing the access means when the actuating means is in one position thereof effecting de-actuation of the circuit completing

means, and means removable from the housing and selectively insertable through the access means for driving the closing



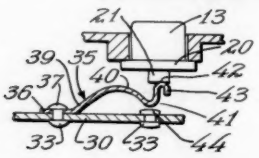
means to conjointly displace it away from the access means and drivingly shift the actuating means to its other position to actuate the circuit completing means.

3,858,019

FLEX SPRING CONTACT SWITCH FOR PUSH BUTTONS

Robert A. Muri, 601 Fifth Ave. N.W., Chisholm, Minn. 55719, and Richard C. LaBorde, 1414 Merryview Ln., Hibbing, Minn. 55746

Filed Apr. 30, 1973, Ser. No. 355,888
Int. Cl. H01h *3/12*
U.S. Cl. 200—159 A **1 Claim**



1. A switch for use in combination with a panel of insulating material including:

a spring blade having an anchoring end portion in face contact with the insulating panel,

a curved blade portion connected to said anchoring end portion at an acute angle to said panel,

said curved blade portion curving gradually toward parallel relation to the surface of said panel and then toward the surface of the panel,

an actuating end connected to the end of said curved blade portion along a reversely curved area of short radius providing a convex wiping surface directed toward said panel and in spaced relation thereto,

means securing said anchoring end portion in face contact with said panel,

a stationary contact on one surface of said panel having a rounded surface in spaced opposed relation to said spring blade,

said actuating end of said blade extending from said convex wiping surface in a direction away from said panel and having a reversely curved extremity to provide a convex actuating surface directed away from said panel, said convex wiping surface being between said convex actuating surface and said anchoring end portion,

a top panel in spaced parallel relation to said panel of insulating material having an aperture in opposed relation to said actuating end of said blade, and

a button slideably supported in said aperture removably bearing against said convex actuating surface and operable, when actuated to flex said curved blade portion to cause engagement between said convex wiping surface of said blade against said stationary contact, further movement of said button acting to flex said convex wiping surface of said blade toward said anchoring end portion to create a wiping action of said convex wiping surface of said blade relative to said stationary contact.

3,858,020

PUSHBUTTON WITH SPRING CONTACTOR

William E. Brannon, Buena Park, Calif., assignor to Staco-Switch, Inc., Costa Mesa, Calif.

Filed July 30, 1973, Ser. No. 384,020
Int. Cl. H01h *13/52*
U.S. Cl. 200—159 A **6 Claims**

1. A pushbutton switch comprising:

a button for manual articulation with a skirt and spider legs having concavities;

a board having an electrically conductive surface thereon;

a spring contactor with legs which are adapted to be received in the concavities of said button spider legs and which span at least a portion of said electrically conductive surface on said board;

a depending extension between said legs of said spring contactor for making electrical contact therethrough to

the electrically conductive surface of said board through said legs and said extension; and,

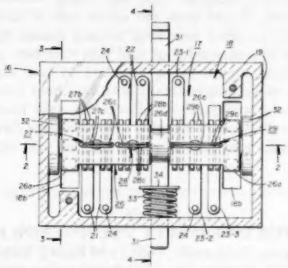
a plate overlying said button skirt having an opening and guide means on its interior surface for holding and guiding a portion of said button and providing a projection through the opening of the upper portion of said button for manual articulation thereof above the surface of said plate.

3,858,021

ELECTRICAL SWITCHING DEVICE HAVING SELF-CLEANING CONTACTOR ELEMENTS

James D. Brandlein, Indianapolis, Ind., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Mar. 1, 1973, Ser. No. 337,266
Int. Cl. H01h *1/36*
U.S. Cl. 200—164 **10 Claims**



1. A contact making device, which comprises:

a substantially linear contactor element mounted in a substantially fixed position;

an arcuate movable contactor element mounted in coplanar relationship with respect to said linear contactor element, for engaging and making contact with said linear contactor element; and

means for rotating said arcuate contactor element while imparting a translating motion to said arcuate contactor element, to rotate and slide said arcuate contactor element simultaneously and continuously on said linear contactor element, to effect contact between said contactor elements while cleaning said contactor elements.

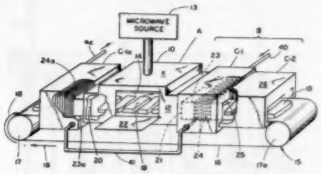
3,858,022

MICROWAVE APPLICATOR

Franklin J. Smith, Diablo, Calif., assignor to Microdry Corporation, San Ramon, Canada

Filed Apr. 21, 1972, Ser. No. 246,452
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **15 Claims**

1. Microwave Applicator Apparatus comprising a casing providing a heating cavity and having openings through which material to be treated may be passed into and out of said cavity, means for exciting said cavity with microwave energy, an attenuating channel having its one end in communication with one of said openings and having at its other end an opening through which said material may be passed, said channel having conducting outer walls and having at one section



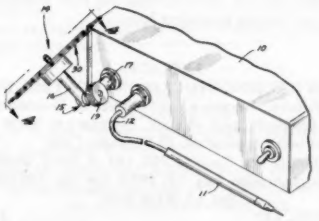
thereof between said ends a lining adjacent to said outer walls formed of a sheet material which is lossy to microwave energy, a flat side of said sheet material being in contact with said walls, said section containing a plurality of passageways leading from the interior thereof to one of said outer walls, said passageways being formed by spaced plates of conducting material extending across said section.

3,858,023

ELECTRODE HOLDER FOR ELECTRIC SOLDERING MACHINES

Clarence V. Gorder, 1537 Avenue D, Billings, Mont. 59102

Filed Aug. 16, 1973, Ser. No. 388,989
Int. Cl. B23k *3/00*
U.S. Cl. 219—85 **5 Claims**



1. In an electrode holder for use with an electric soldering machine,

a. an elongated metal support having a plug at one end adapted to be coupled with the electric current of the machine, said support having inner and outer arms arranged end to end and pivotally interconnected at their adjacent ends for adjusting the angle between the arms,

b. a flat symmetrically shaped metal cartridge journaled for rotation about its center on the end of the outer arm, said cartridge having a plurality of clip means spaced around the marginal portion thereof.

3,858,024

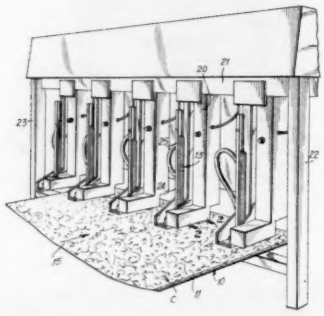
MULTI-HEAD RESISTANCE WELDING APPARATUS

Milton Hinden, Massapequa, and Charles Giannone, North Babylon, both of N.Y., assignors to Duro-Dyne Corporation, Farmingdale, N.Y.

Continuation-in-part of Ser. No. 323,099, Jan. 12, 1973,. This application Nov. 7, 1973, Ser. No. 413,665

Int. Cl. B23k *9/20*

U.S. Cl. 219—98 **8 Claims**



1. A multi-head resistance welding apparatus for simultaneously securing a plurality of resistance welding pins to unite a composite including a metal substrate having an insulating layer thereon, said composite being moved in a predetermined horizontal direction, comprising a frame, a horizontal work support surface on said frame, an elongated support beam on said frame disposed above and in parallel spaced relation to said work support surface, a plurality of resistance welding assemblies mounted in spaced relation along said beam, said assemblies each including linear motor means shiftable in a vertical direction toward and away from said support surface, electrode means mounted on the lower end portions of each of said motor means, automatic means on said weld assemblies for sequentially feeding headed weld pins from a bulk supply, carrier means on said electrode means for receiving pins from said supply, said carrier means supporting said pins while in welding position for movement relative to said electrode in said predetermined horizontal direction while maintaining a conductive connection between said pins and said electrode, whereby said pins are retained on said carrier in position to be welded to said substrate notwithstanding relative movement between said pins and electrode resulting from contact of said pins and said moving insulating layer.

3,858,025

PATTERN WELDING PROCESS AND CONTROL DEVICE

Paul R. Sidbeck, Torrance, and Daniel S. Weinstein, Palos Verdes Peninsula, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Continuation of Ser. No. 185,995, Oct. 4, 1971, abandoned. This application Aug. 23, 1973, Ser. No. 390,985

Int. Cl. B23k *9/00*

U.S. Cl. 219—137 **3 Claims**

1. A method of joining workpieces to form a substantially T-shape configuration having a first thin metallic vertical workpiece member and a second metallic horizontal workpiece member, and an edge of said first member being jointed to the lower surface of said second member by fusion welding which forms a weld fillet therebetween, said method comprising the steps of:

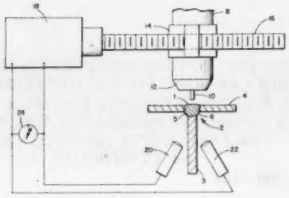
positioning said edge of said first member in contact with said surface of said second member to form a joint therebetween;

applying heat to the opposite surface of said second member so that said heat is conducted through the thickness of said second member and induced into said edge of said first member to unite the area of contact between said first and second member;

moving the source of heat along the area to be welded, said heat source being supported by a supporting frame for movement therewith;

maintaining an equally balanced fillet size continuously along the fusion weldment throughout the length of said workpieces;

tracking said heat source along a path predetermined by said edge of said first workpiece member; and



sensing the heat radiation from said fusion weldment by a heat sensing means from the under side of said second workpiece member said heat sensing means being disposed on opposite sides of said first member, and, said heat sensing means being attached to said supporting frame to move longitudinally with said heat source relative to said workpieces and wherein said heat source being simultaneously movable in a transverse direction to that of said longitudinal movement of said supporting frame.

3,858,026

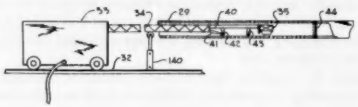
METHOD FOR INTERNALLY WELDING PIPE JOINTS

Coy W. Edwards, Holdenville, Okla., and Enos J. Laborde, Jr., Odessa, Tex., assignors to CRC-Crose International, Inc., Houston, Tex.

Division of Ser. No. 200,030, Nov. 18, 1971, Pat. No. 3,764,056. This application Sept. 7, 1973, Ser. No. 395,333

Int. Cl. B23k *9/00*

U.S. Cl. 219—137 **6 Claims**



1. Method of internally welding pipe joints together, comprising:

1. placing two joints of pipe into abutting relationship to form an interface therebetween;
2. placing circumferentially extending indicia adjacent and parallel to said interface on the interior of the pipe joint;
3. adjustably mounting a welding head onto one end of a boom in a manner to enable the head to be moved relative to the boom and pipe joints;
4. telescopingly moving said end of the boom along with the welding head into the interior of the pipe and into close proximity of said interface;
5. aligning the welding head with the interface by moving the head relative to the boom;
6. controlling the action of the welding head and the boom from a location remote from the pipe interior;
7. mounting a television camera adjacent to the welding head and a television receiver at the location remote from

the pipe interior, so as to enable the camera to televise an internal view of the pipe to the receiver;

8. placing a pointer means in front of the camera in aligned relationship respective to the welding head;

9. visually observing the area in close proximity to the welding head from a location remote from the interior of the pipe, so as to enable remote control of the position of the pointer means relative to the indicia as a welding bead is formed interiorly of the pipe and along said interface.

3,858,027

ROAD VEHICLE REAR WINDOW HEATER CIRCUITS

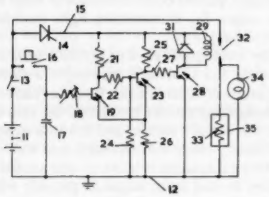
Edward Graham Phillips, Colne, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Mar. 5, 1973, Ser. No. 338,221

Claims priority, application Great Britain, Apr. 7, 1972, 16055/72

Int. Cl. H05b *1/02*

U.S. Cl. 219—203 **1 Claim**



1. A road vehicle rear window heater circuit, which comprises:

a rear window of a road vehicle having rear window heating means associated therewith;

a battery connected to said rear window heating means for supplying electrical energy thereto;

a first switch connected in series between said battery and said rear window heating means; and

timing circuit means connected between said battery and said rear window heating means for selectively actuating said rear window heating means for a predetermined time interval after the closure of said first switch, said timing circuit means comprising:

a second switch which is resiliently urged to an open position;

a capacitor connected to said battery through said second switch and said first switch, said capacitor being charged upon momentary closure of said second switch;

a bistable trigger circuit comprising first and second transistors connected in a Schmitt trigger configuration, the base of said first transistor connected to receive the charge from said capacitor to initially be rendered conductive while said second transistor is rendered non-conductive;

a third transistor connected across said second transistor, said third transistor being initially driven into conduction by a connection through said first switch to said battery; a relay having a coil, and a pair of contacts connected between said first switch and said heating means, said coil and contacts being actuated by the output from said third transistor for energizing said rear window heating means; said first transistor being rendered non-conductive after the discharge of said capacitor to thereby render said second transistor conductive and said third transistor non-conductive to thereby deactivate said relay and disconnect said rear window heating means from said battery.

3,858,028

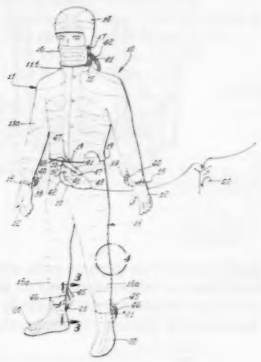
CYCLIST'S HEATED SUIT

John F. Kerr, 1305 E. Haley St., Santa Barbara, Calif. 93103

Continuation of Ser. No. 332,899, Feb. 15, 1973, abandoned. This application Apr. 11, 1974, Ser. No. 460,026

Int. Cl. H05b *1/00*

U.S. Cl. 219—211 **4 Claims**



1. In heated clothing, the combination comprising

a. multiple clothing sections each adapted to cover a different portion of a human body, and snap fastener means releasably fastening certain of said sections together in series sequence permitting sequential removal thereof,

b. electrical wires carried by each section and including only two electrically parallel bus wires and heater wires connected thereacross,

c. separable electrical connections between the bus wires of adjacent clothing sections,

d. input electrical connections to the parallel bus wires of at least one of said clothing sections, and

e. the bus wires carried by successive of said certain sections being connected in electrical series by said separable electrical connections each of which includes a male part and a female part respectively located further from and closer to said input electrical connections, said parts openly accessible outwardly of said clothing sections for plugging and unplugging without disturbing the snap fasteners,

f. said certain clothing sections including a jacket, a hood, and a face mask.

3,858,029

HAIRSETTER

Henry J. Walter, Wilton, Conn., assignor to Clairol Incorporated, New York, N.Y.

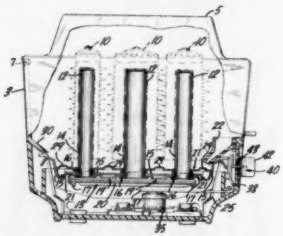
Continuation of Ser. No. 73,394, Sept. 18, 1970, abandoned. This application Apr. 25, 1972, Ser. No. 247,395

Int. Cl. H05b *3/02*; **A45d** *4/12*

U.S. Cl. 219—222 **14 Claims**

1. A hairsetter, capable of heating hair rollers either with or without the use of a liquid according to the desire of the user, comprising, in combination, a housing having wall means defining a substantially closed chamber adapted to contain water vapor; a shallow dished-shaped base plate supported entirely within the housing wall means, adapted to receive and retain a quantity of liquid thereon for vaporization; a plurality of heat conducting roller mounting members associated with the base plate, and adapted to support a corresponding plurality of rollers having a heat conducting surface in contact with and supported by the roller mounting members, said rollers

being positioned by said mounting members so as to be exposed to the liquid vaporized from the base plate; and heating means operatively associated with said base plate for heating



any liquid retained on the base plate and the mounting members such that the rollers supported on the mounting members can be heated simultaneously exteriorly by the heated vaporized liquid and/or interiorly by the heated mounting members.

3,858,030

TAXIMETERS

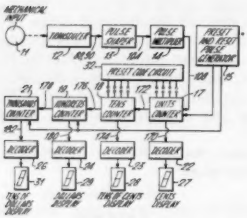
Francis Joseph Hart, North Balwyn, Australia, assignor to Martin Taximeters (Aust.) Pty., Ltd.

Filed May 7, 1973, Ser. No. 357,780

Claims priority, application Australia, May 10, 1972, 8917/72

Int. Cl. G07b *13/00*

U.S. Cl. 235—30 R **14 Claims**



1. A taxi meter having a rotatable control element, means for driving said element at a constant preselected rate, means for driving the element at a rate dependent upon the speed of a vehicle to which the taxi meter is affixed and clutch means for selectively coupling either of said drive means to said element so that the element is driven, when the vehicle is moving at more than a preselected speed, by said second means, and when the vehicle is stationary or moving at less than said preselected speed, by said first means, said device further including transducer means coupled to said element for producing an electrical signal pulse train representative of the speed of rotation of the element and electronic counter and display means for counting the pulses of said train and displaying a fare value proportional to the number of pulses counted.

3,858,031

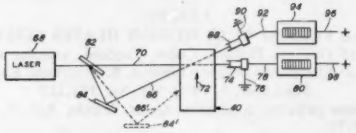
CREDIT CARD HAVING CLEAR MIDDLE LAYER ENCODED BY DISCRETE OPAQUE AREAS AND SYSTEM FOR DECODING SAME BY LASER BEAM

Jack P. Kornfeld, Glencoe, Ill., assignor to Bliss & Laughlin Industries, Incorporated, Oak Brook, Ill.

Filed Feb. 16, 1973, Ser. No. 333,204

Int. Cl. G06k *7/10, 19/06;* **G08c** *9/06*

U.S. Cl. 235—61.11 E **8 Claims**



1. A credit card system comprising:

a laminated credit card having a rectangular body including a center layer of transparent, light-transmitting material between a pair of cover sheets, said body having opposed open edges for transmitting light into and out of said center layer;

means for coding said card to produce read-out information including: (a) a barrier consisting of a plurality of discrete opaque areas in said center layer set back to non-exposed positions substantially inwardly from said edges to render them not readily visible; and (b) said opaque areas being individually lesser in both length and width than said body and being displaced relative to one another in a direction parallel to said open edges to provide windows defining a set of straight parallel light-transmitting channels extending edgewise through said center layer at a predetermined angle and spaced apart irregularly along said card in accordance with a predetermined code;

means for decoding said card including means for supporting said card in a laser beam focused at said predetermined angle parallel to said light-transmitting channels into one of the open edges of said center sheet toward light sensor means beyond the other open edge, said light sensor means being effective to generate a signal in response to change in intensity of said laser beam directed thereon, and means for effecting relative movement between said card on the one hand and said laser beam and light sensor means on the other hand to enable said light sensor to generate an output signal corresponding to the information coded into said set of light-transmitting channels; and

read-out means for said light sensor means operable in response to said output signal from said light sensor for producing information decoded from said set of light-transmitting channels.

3,858,032

APPARATUS AND METHOD OF CODING INFORMATION

John R. Scantlin, Los Angeles, Calif., assignor to Transaction Technology Inc., Los Angeles, Calif.

Division of Ser. No. 242,382, April 10, 1972,. This application May 25, 1973, Ser. No. 363,825

Int. Cl. G06k *19/02, 1/20;* **G09f** *3/04*

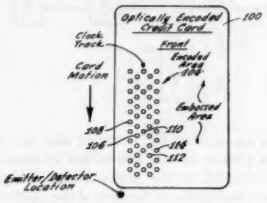
U.S. Cl. 235—61.12 R **9 Claims**

1. An article of manufacture for storing data information and clock information for reproduction by first means which reproduces and stores the data information and by second means, including at least a pair of sensors, coupled to the first means and responsive to the clock information which second means controls the reproduction and storage of the data information by the first means in accordance with the sensing of the clock information to have the data information at one position reproduced by the first means in response to the sensing of particular clock information by a first one of the

pair of sensors and to have the same data information at the one position stored by the first means in response to the sensing of the same particular clock information by the second one of the pair of sensors, and with the article of manufacture including,

a recording medium for receiving the data information and the clock information,

first means forming at least a first track on the recording medium for storing the data information at first predetermined intervals along the first track on the recording medium, and



second means forming a second track on the recording medium for storing the clock information at second predetermined intervals along the second track on the recording medium and with the second predetermined intervals occurring no more than every other one of the first predetermined intervals and with the second predetermined interval a multiple of the first predetermined interval.

3,858,033

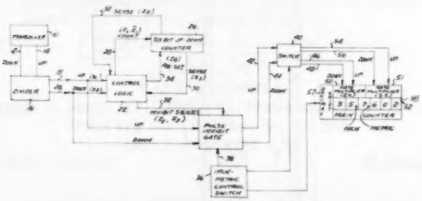
INCH-METRIC READ-OUT FOR A MEASURING SYSTEM

Robert E. Esch, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 29, 1973, Ser. No. 345,912

Int. Cl. H03k *21/06, 21/36*

U.S. Cl. 235—92 PL **2 Claims**



1. A measuring system for selectively displaying measured distances in inch or Metric unit systems comprising:

counter and display means responsive to each digital signal received to count and numerically display alternatively in numerical increment values of 0.0050 or 0.0002 selectively;

digital signal generation means generating a train of digital signals corresponding to measured distances in a given direction, the generation rate of said signals relative to said measured distances being such that the distance corresponding to the generation of one digital signal equalsl 0.0050 millimeters;

digital signal transmission control means selectively allowing all of said digital signals in said digital signal train generated by said digital signal generation means to be transmitted to said counter and display means or alternatively suppressing one digital signal at successive alternate intervals of 63 and 64 digital signal counts in said train equivalent to said rate of one signal in 63.5 signals; whereby said counter and display means counts and displays in millimeters in response to said digital signals whenever said digital signal train is transmitted unchanged by said digital signal transmission control means and said counter and display means counts and displays in inch values whenever said digital signals are suppressed by said digital signal transmission control means and said counter and display means counts and displays in said numerical increment value of 0.0002.

3,858,034

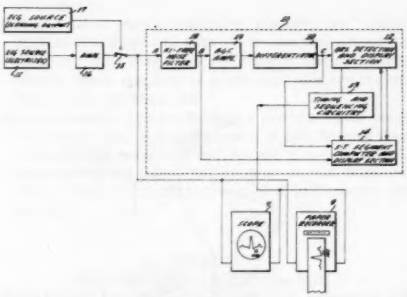
ELECTROCARDIAC COMPUTER

Donald L. Anderson, Huntington Beach, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.

Filed Oct. 19, 1973, Ser. No. 407,794

Int. Cl. A61b *5/04;* **G06g** *7/48*

U.S. Cl. 235—151.3 **32 Claims**



1. An ECG computer for processing ECG complexes each having at least an iso-electric portion, a QRS section, and an S-T segment, including:

first means responsive to the ECG complexes for providing output signals representing the detection of wide or normal QRS sections,

second means coupled to the first means and responsive to the detection of wide QRS sections to provide an output indication of the wide QRS sections,

third means coupled to the first means and responsive to the detection of normal QRS sections to provide a control signal representing the detection of normal QRS sections, fourth means coupled to the third means and responsive to the control signal and the ECG complexes to analyze the S-T segments by averaging over a plurality of the ECG complexes and with the analysis in response to the control signal representing the detection of normal QRS sections.

3,858,035

POSITION SELECTING DEVICE

John Sven Englund, Ektorp, Sweden, assignor to Hugin Kassaregister AB, Stockholm, Sweden

Filed Oct. 10, 1972, Ser. No. 296,231

Claims priority, application Sweden, Oct. 8, 1971, 12770/71

Int. Cl. G06c *9/00*

U.S. Cl. 235—156 **12 Claims**

1. A position selecting device for transferring number of character values having at least one position and represented by electrical pulses in an electronic calculating unit to mechanical indicating means such as a mechanical calculating or printing unit or the like, and for setting the values so represented, said selecting device comprising

a. a power source,

b. a setting shaft rotatable in only one direction, said setting shaft being driven by said power source,

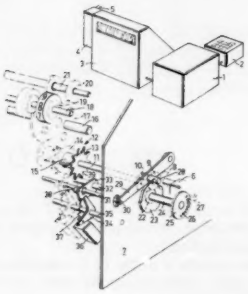
c. a plurality of rotatable setting units, one for each number position, each setting unit having a first position thereof which is the normal and reset position thereof, and a second position thereof which is the setting position thereof, each setting unit upon rotation thereof for oper-

ating said mechanical indicating means, each setting unit being rotatable in only one direction from said first position thereof, through said second position thereof, and back to said first position thereof,

d. means for providing selective engagement and disengagement between said setting shaft and each of said setting units to provide either for rotation of each of said setting units with said setting shaft or no rotation of each of said setting units with said setting shaft, said setting shaft being common to all setting units,

e. a pulse transmitter common to all number positions, said pulse transmitter operatively connected to said power source to rotate synchronously with said setting shaft and adapted to determine said second positions of said setting units, and

f. means for providing simultaneous disengagement of all said setting units from said setting shaft, said means comprising (i) a blocking mechanism for each setting unit, each blocking mechanism having a first position thereof during which its corresponding setting unit is in engagement with said setting shaft for rotation therewith toward said second position thereof, a second position thereof corresponding to its corresponding setting unit being in its second position thereof, and a third position thereof corresponding to its corresponding setting unit being in its first position thereof or rotating toward said first position thereof, and (ii) a cam disc common to all said setting units and corresponding blocking members, said cam disc operatively connected to said power source to simultaneously rotate with said setting shaft, said cam disc for operating said blocking mechanisms simultaneously from said first to said second position thereof and from said second position to said third position thereof while not interfering with movement of said blocking member from said third to said first position thereof.



3,858,036

SQUARE ROOT OF SUM OF SQUARES APPROXIMATOR

John Albert Lunsford, Delran, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 26, 1974, Ser. No. 445,967

Int. Cl. G06f 7/48; G06g 7/20

U.S. Cl. 235—158 **4 Claims**

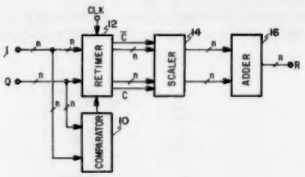
1. The combination comprising:

source means for providing signals indicative of two values;

comparator means responsive to the source means for providing an output signal indicative of the relative magnitudes of the two values;

scaler means responsive to the source means and the output signal from said comparator means for producing quotient signals by dividing the lesser of said two values by two and the greater of said two values by one; and

adder means coupled to the scaler means for producing output signals indicative of the sum of the quotient signals produced by said scaler means.



3,858,037

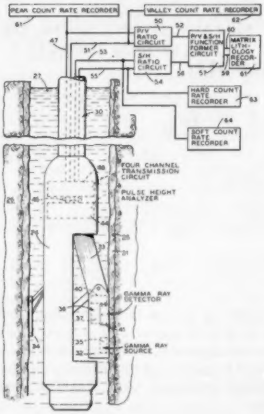
WELL-LOGGING MEASURING APPARATUS AND METHOD

Donald C. Moore, Ridgefield, and Jay Tittman, Danbury, both of Conn., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 48,641, Jan. 18, 1973, abandoned, which is a division of Ser. No. 716,456, March 27, 1968, abandoned. This application Jan. 18, 1973, Ser. No. 324,619

Int. Cl. G01t 1/16

U.S. Cl. 235—193 **18 Claims**



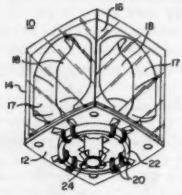
1. A computer for analyzing characteristics of an earth formation traversed by a borehole wherein measurements for use by said computer are derived from a logging tool adapted to pass through a borehole while emitting gamma radiation into and detecting gamma radiation from a formation, comprising a first source of signals corresponding to detected gamma radiation and representative of detected photons of energies within a predetermined range which is less than about 33 keV and substantially greater than 0 keV, a second source of signals corresponding to detected gamma radiation and representative of detected photons of energies greater than about 39 keV, and circuit means for combining signals from said sources to produce a first output signal representative of a subsurface characteristic.

3,858,038

MULTIFLASH DEVICE FOR CLOSE-UP PHOTOGRAPHY

Bruce T. Buzalski, Dover, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 12, 1973, Ser. No. 423,970
Int. Cl. G03b 15/02
U.S. Cl. 240—1.3 4 Claims



1. A multiflash lighting device adapted for use in taking photographs at close range, said device comprising the combination of:

a base member,

a plurality of photoflash lamps mounted on said base member,

a protective cover secured to said base member in enclosing relationship with said photoflash lamps, the walls of said cover that are adjacent to said lamps being light transmissive, and

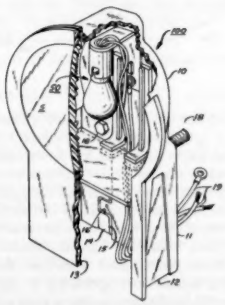
a reflector member within said cover defining an individual reflector element for each of said photoflash lamps, each of said reflector elements being disposed in operative relationship with its associated lamp, said reflector member being composed of a plastic that contains a uniformly-dispersed inorganic white pigment in an amount such that the surfaces of the reflector elements are opaque and non-specular and reduce the peak light output of each of the flashlamp-reflector combinations to a value at least 30% lower than that produced by an identical flashlamp and a reflector of the same size and configuration that is coated with a specular layer of aluminum.

3,858,039

LAMP ASSEMBLY

Dennis G. Moore, 1312 Kathy Ct., Livermore, Calif. 94550

Filed Feb. 20, 1973, Ser. No. 333,801
Int. Cl. B60q 1/30, 1/56
U.S. Cl. 240—8.3 20 Claims



1. A submersible electric lamp comprising

housing means defining an enclosure for an electric lamp assembly,

lens means forming a portion of said housing means,

an electric lamp assembly adapted for connection to a source of illuminating energy and carried within said housing means in optical alignment with said lens means, said electric lamp assembly including a bulb socket for receiving the base of a bulb thereby electrically coupling said bulb to a source of illuminating energy,

said housing means having an open air chamber portion extending beneath said electric lamp assembly and terminating in an open end thereof,

bulb slide means positionable within said housing means through said open air chamber portion and carrying said electric lamp assembly at one end thereof for positioning said electric lamp assembly in optical alignment with said lens means,

said open air chamber having a retaining portion extending from adjacent the open end thereof to receive said bulb slide means,

said bulb slide means extending adjacent said retaining portion of said open air chamber in operative engagement therewith such that at an end thereof spaced from said electric lamp assembly is positioned adjacent the open end of said chamber, and

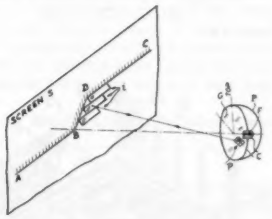
said air chamber portion defining a predetermined volume of air such that upon submersion of said housing means in liquid said predetermined volume of air will be compressed creating a force sufficient to prevent liquid from rising within said lamp to the level of said electric lamp assembly.

3,858,040

MOTOR VEHICLE HEADLAMPS

Jacques Ricard, Fontenay-sous-Bois, France, assignor to Cibie Projecteurs, Bobigny, France

Filed July 23, 1973, Ser. No. 381,555
Claims priority, application France, May 14, 1970, 70.17586
Int. Cl. F21v 13/04
U.S. Cl. 240—41.3 9 Claims



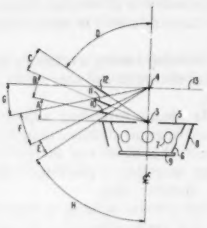
1. In a motor vehicle headlamp comprising a parabolic reflector adapted to be mounted with a horizontal axis on a vehicle, a light filament for dipped lighting located in the vicinity of the focal point of said reflector, a front glass, cut-out means for effecting cut-out of the dipped light beam according to a left and a right horizontal half plane of cut-out on either side of the central axis of said reflector and of said headlamp, the improvement comprising a plurality of juxtaposed, prismatic elements, each of said prismatic elements intersecting a small part of said dipped beam just below said right half plane of cut-out, said small part of said beam projecting with respect to a reference screen a quadragular image having an upper inside corner and an upper horizontal boundary, each of said series of prismatic elements deflecting said part of said beam in a vertical direction and also in a transverse direction to translate said corner to coincide on said screen with an oblique segment, all of said prismatic elements intersecting and deflecting different parts of said dipped beam to create finally for said beam a central cut-out limit surface approximating step-by-step-wise on said screen said oblique

segment and a lateral horizontal limit surface staggered in height relative to said unchanged left half plane of cut-out.

3,858,041
HAZARD LIGHT SHIELD

Richard M. Hitchcock, Springfield, Vt., assignor to Dufresne-Henry Engineering Corporation, North Springfield, Vt.

Filed Jan. 28, 1974, Ser. No. 437,289
Int. Cl. F21v *11/16*
U.S. Cl. 240—46.53 **3 Claims**

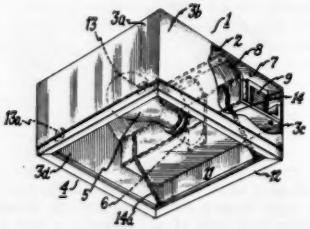


1. A shield for a pair of hazard lights spaced on a vertical axis, comprising an opaque disk in a horizontal plane at the lower of said lights, and a series of circular louvres which are conic sections concentric with said axis and arranged in the zone between said plane and a parallel plane passing through the upper one of said lights, the surface of each of said louvres being aligned with all of the radial lines passing through the point represented by said lower light at a given angle to said axis.

3,858,042
LIGHTING FIXTURE

David D. Peterson, North Kingstown, R.I., assignor to General Electric Company, Pittsfield, Mass.

Filed July 5, 1973, Ser. No. 376,457
Int. Cl. F21v *17/00*
U.S. Cl. 240—147 **6 Claims**

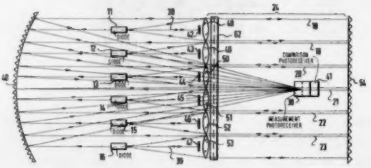


1. A luminaire comprising, in combination, a housing having side walls and a bottom rim defining and extending around an opening having an axis, lampholder means for mounting a light source within said housing so that light rays from the light source emanate through said bottom opening, said bottom rim projecting inwardly and downwardly at an oblique angle relative to said axis, and closure means removably covering said bottom opening in closed position, said closure means comprising a light transmitting panel and a frame surrounding said panel, said frame having an upper surface formed at an angle corresponding to said oblique angle of said bottom rim and being in closely adjacent, substantially parallel relation to said bottom rim in the closed position of said closure means, whereby any light leakage between said frame and said bottom rim is directed upwardly.

3,858,043
LIGHT BARRIER SCREEN

Erwin Sick, Icking, and Ernst Gass, Munich, both of Germany, assignors to Erwin Sick Optik-Elektronic, Waldkirch, Germany

Filed Sept. 20, 1973, Ser. No. 398,943
Claims priority, application Germany, Sept. 26, 1972, 2247053
Int. Cl. G06m *7/00*; G08b *13/00*
U.S. Cl. 250—221 **2 Claims**

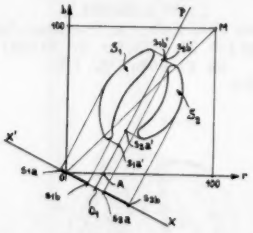


1. A light barrier screen having a plurality of sequentially arranged light sources which emit a light beam occupying a given predetermined area, said individual light sources being introduced through a single energy source in rapid temporal sequence, the light beams coming out of said area being optically unified upon a single measurement-photoreceiver which registers the intensity of the light beams coming out of said area and emits an output signal upon a given decrease in intensity of one or more light beams, and a single evaluation electronics connected to said measurement-photoreceiver for the evaluation of electrical signals actuated by the individual light beams coming out of said area.

3,858,044
RECOGNITION OF COLORS BY PHOTO-SENSITIVE MEANS

Pierre Frappe, Lyon, France, assignor to Verdol S.A., Caluire et Cuire, France

Filed Nov. 6, 1973, Ser. No. 413,371
Claims priority, application France, Feb. 2, 1973, 73.04392
Int. Cl. G01j *3/34*
U.S. Cl. 250—226 **8 Claims**



1. A method for the automatic recognition of the coloring dyes used in a sample such as a drawing for the preparation of the perforated cards or bands for loom Jacquards, by means of photo-sensitive means which analyze in a number of wave lengths the light reflected by each of the dyes to be recognized when the corresponding portion of the sample is illuminated by a light beam of predetermined characteristics, recognition of each dye from which the light is reflected being based on the position of the point which represents the responses of the photo-sensitive means corresponding to each wave length in a first system of coordinates having *n* axes in which each of the *n* axes corresponds to one of said wave lengths, the response of each of said photo-sensitive means being plotted along the one of the axes of said first system which corresponds to the same wave length, said method including the following steps:

determining for each of said dyes to be recognized the permissible variations in its color attributes and in its density on the sample, in said first coordinate system;

determining in said first system of coordinates all the possible loci of points representative of the color attributes and density of each of said dyes to be recognized, taking into account said permissible variations, to thus obtain a number of loci equal to the number of said dyes;

transforming said first system of coordinates to obtain a second system having as many axes as said first system, each pair of axes of said second system defining a plane; projecting said loci on at least one of said planes selected such that the projections of the loci do not intersect each other;

drawing in said one of said planes, lines which separate from each other the projections of said loci;

analogically representing each of said lines by electronic circuits having circuit means for each one of said planes equal to the number of separating lines, each of said circuits means receiving inlet signals corresponding to the coordinates of a point in said one of said planes and each emitting an outlet signal at a predetermined level when said last-named point is part of the separating line, at a level above said predetermined level when said last-named point is situated on one side of said last-named separating line, and at a level below said predetermined level when said last-named point is on the other side of said last-named separating line;

determining in said second system of coordinates the new coordinates of any representative point by transforming its coordinates in said first system as they result from the responses of said photo-sensitive means;

applying as said inlet signals to each of said electronic circuit means analog signals corresponding to the new coordinates of each representative point along the new axes which define said one of said planes;

and determining for each selected plane based upon the level of the outlet signals of said electronic circuit means which of said separating lines the projection of the representative point for each dye to be recognized is located between.

3,858,045

DETECTION OF BIOLOGICAL ACTIVITY

John R. Waters, 801 Stags Head Rd., Towson, Md. 21204

Filed Apr. 24, 1973, Ser. No. 353,953

Int. Cl. G01t *1/00*; C12k *1/04*

U.S. Cl. 250—303 **7 Claims**

1. In the process of detecting biological activity in blood wherein:

a. a growth medium including a C^{14} containing carbon source which is fermentable to produce carbon dioxide is inoculated with a blood sample;

b. the inoculated sample is exposed to conditions conducive to the occurrence of normal metabolic processes for a period of time sufficient to cause production of carbon dioxide by the fermenting of said source; and

c. at least a portion of the gaseous atmosphere from said fermentation is measured for radioactivity to determine the presence of $C^{14}O_2$, the improvement comprising lysing mammalian cells present in said blood sample before the sample is exposed for a substantial period of time to conditions conducive to the occurrence of normal metabolic processes, whereby the background noise for the measurement of radioactivity of gaseous $C^{14}O_2$ is reduced.

3,858,046

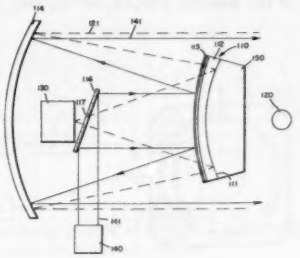
CATADIOPTRIC BEAMSPLITTER SYSTEM

Ronald Cubalchini, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 373,522, June 25, 1973,. This application Dec. 26, 1973, Ser. No. 428,262

Int. Cl. G01j *1/20, 3/50*; G01t *1/16*

U.S. Cl. 250—353 **7 Claims**



6. An optical tracking system for tracking a target by a first wave having a first wavelength and directing thereto a second wave having a second wavelength comprising:

primary reflector means for receiving a first infrared wave from said target and reflecting said first infrared wave to secondary reflector means, said primary reflector for receiving a second infrared wave from said secondary reflector means and reflecting said second infrared wave to said target;

secondary reflector means having a first reflecting surface with a first focal length for receiving said first infrared wave from said primary reflector and reflecting said first infrared wave to infrared detector means, said secondary reflector means having a second reflecting surface with a second focal length for receiving said second infrared wave from laser means and reflecting said second infrared wave to said primary reflector means, said second reflecting surface being transmissive to said first infrared wave, said secondary reflector having a lens with a selected index of refraction for providing a predetermined refraction of said first infrared wave passing therethrough;

infrared detector means for detecting said first infrared wave; and

laser means for emitting said second infrared wave.

3,858,047

DEVICE FOR MEASURING THE RATE OF ENERGY LOSS AND FOR DETECTING IONIZING NUCLEAR RADIATIONS AGAINST GAMMA-RADIATION BACKGROUND

Stanislav Fedorovich Kozlov, B Akademicheskaya, 49, korpus I, kv. 18, Moscow, U.S.S.R.

Continuation of Ser. No. 861,913, Sept. 29, 1969, abandoned. This application Mar. 30, 1973, Ser. No. 347,449

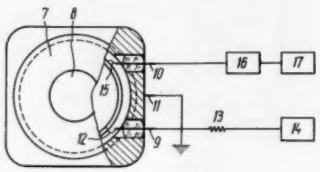
Claims priority, application U.S.S.R., Sept. 27, 1968, 1273640

Int. Cl. G01t *1/24*

U.S. Cl. 250—370 **5 Claims**

1. A device for measuring the rate of energy loss and for detecting ionizing nuclear radiations against a gamma-radiation background, comprising in combination: a housing; a diamond nuclear radiation detector mounted in said housing, said detector comprising a diamond crystal plate including contacts formed at the opposite sides thereof and designed for the applying of an electric field to said plate when detecting ionizing nuclear radiations, one of said contacts being located on the irradiated side of said plate and being constituted as a blocking contact in relation to the charge carriers and the opposite contact being constituted of a material capa-

ble, in conjunction with the diamond crystal plate, of injecting the charge carriers under the influence of the electric field, the thickness of the plate between said contacts being no greater than the maximum drift length of the charge carriers created by the nuclear radiation in the diamond crystal plate under the influence of the applied electric field corresponding to the maximum drift rate; an amplifier having an input connected to said blocking contact; means for recording output signals; a detector power supply connected to said injecting contact of the diamond detector, the blocking and injecting



contacts of said detector being constituted as layers permeable to incident nuclear radiation and of a material having an atomic number less than 15 and the thickness of the diamond crystal plate being less than the range of incident nuclear radiation, said thickness being d in the equation

$$d \quad \delta = \eta\tau E,$$

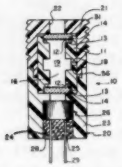
where η is the mobility of charge carriers, τ is the lifetime of charge carriers, E is the applied field strength, δ is the distance travelled by charge carriers under the influence of the applied electric field.

3,858,048

SENSOR-EYE FOR ULTRA-VIOLET WATER STERILIZER

William A. Shand, and Wolfgang Scherrelies, both of Vancouver, British Columbia, Canada, assignors to Naturvard Research (Canada) Ltd., British Columbia, Canada

Filed Aug. 9, 1973, Ser. No. 387,012
Claims priority, application Canada, Aug. 23, 1972, 150080
Int. Cl. G01n *21/24*
U.S. Cl. 250—373 **6 Claims**



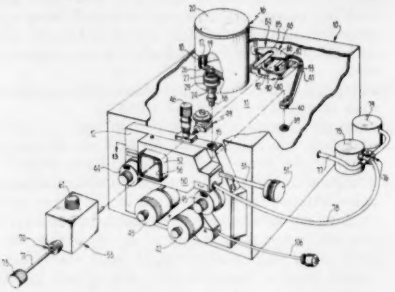
1. A Sensor-eye comprising: (a) a hollow member having two opposite ends each defining, an orifice with a circumscribing seat about the orifice, said member defining a plenum communicating with the orifices, the plenum having part of the crossectional area larger than the area of the respective orifice; (b) sealing members mounted in the respective seats; (c) windows disposed in the orifices and mounted in said seats over said sealing members; (d) an ultra-violet transmission fluid disposed within the plenum between the two windows; (e) means urging the windows against the sealing means and seats to constrain the fluid within the hollow member.

3,858,049

METHOD AND APPARATUS FOR SEM SPECIMEN COATING AND TRANSFER

George R. Koch, Palo Alto, and Carl T. Petersen, Livermore, both of Calif., assignors to ETEC Corporation, Hayward, Calif.

Filed Sept. 17, 1973, Ser. No. 398,101
Int. Cl. H01j *37/18*
U.S. Cl. 250—441 **13 Claims**



1. A method for transferring a specimen to an evacuated SEM chamber having an airlock chamber in communication therewith via a valved aperture, said airlock chamber having an associated normally sealed access aperture having an area substantially less than the area of said valved aperture, said method comprising the steps of:

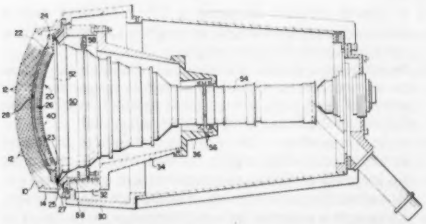
a. mounting said specimen on a specimen cap;
b. releasably attaching said specimen cap to a specimen manipulator;
c. unsealing said access aperture;
d. inserting the portion of said manipulator bearing said specimen cap into said airlock chamber via said normally sealed access aperture;
e. attaching said specimen cap to a specimen shuttle located in said airlock chamber;
f. withdrawing said specimen manipulator from said airlock chamber via said access aperture;
g. re-sealing said access aperture;
h. evacuating said airlock chamber; and
j. transferring said shuttle to said evacuated SEM chamber via said valved aperture.

3,858,050

ELECTRICALLY INSULATING GAMMA RADIATION SHIELD

Roland Wester Carlson, Lyndhurst, Ohio, assignor to The Kewanee Oil Company, Bryn Mawr, Pa.

Filed Sept. 29, 1972, Ser. No. 293,448
Int. Cl. G21f *3/00*
U.S. Cl. 250—515 **3 Claims**



1. In a gamma-ray camera having an image amplification means operating at an electrical potential in the range from about 10,000 to about 100,000 volts, the improvement con-

sisting of a self-supporting insulating axial shield, of sufficient thickness to shield against gamma-rays of predetermined energy, disposed around the circumferentially closely embracing said amplification means in electrically non-conductive spaced-apart relationship therewith, said axial shield comprising a non-radioactive, heavy metal having an atomic number greater than 73, or a compound thereof, disposed within an electrically non-conductive resin so as to prevent arcing between said heavy metal or compound thereof and said image amplification means.

3,858,051

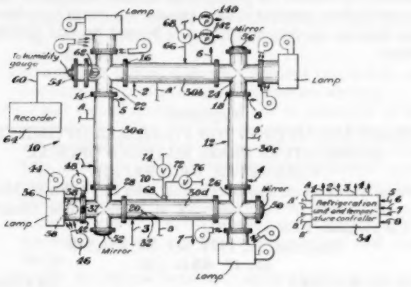
PHOTO-CHEMICAL REACTION APPARATUS

Grant N. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 2, 1973, Ser. No. 347,146

Int. Cl. B01j *1/00*

U.S. Cl. 250—527 **11 Claims**



1. Apparatus for carrying out photochemical reactions comprising a hollow composite gas-tight chamber disposed in a vertical plane and composed of a plurality of elongated hollow tubular walled parts joined together generally at their ends to define a closed loop enclosed flow path, means external of said chamber for directing a source of simulated sunlight down each of said tubular parts, means for maintaining a temperature differential between the walls of at least two of said tubular parts, means for inserting gas or vaporizable material into said chamber, and means for withdrawing material from said chamber.

3,858,052

CONTROL APPARATUS FOR THE REGISTRATION OF A PRINTING PRESS OR THE LIKE

Zdenek Luska, Lausanne, Switzerland, assignor to J. Bobst & Fils, S.A.

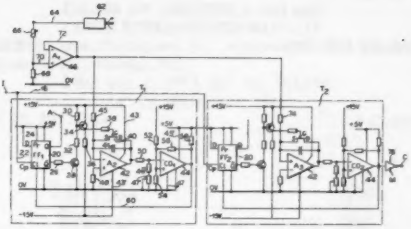
Filed Mar. 9, 1973, Ser. No. 339,926

Claims priority, application Switzerland, Mar. 13, 1972, 339926/72

Int. Cl. B41f *13/44*

U.S. Cl. 250—548 **15 Claims**

1. For use with a printing press having means for removably mounting printing cylinders having different respective diameters, apparatus for obtaining a reading window pulse for assisting in the control of registration of material printed on such press, comprising a pulse generator adapted to generate a starting pulse for each revolution of one of said mounted printing cylinders, means for producing a control signal representative of the speed of travel of the material being printed by said press, and a timing device connected to receive said starting pulse and said control signal for producing a window pulse in response to said starting pulse, said window pulse having a duration which is a function of the speed of travel of



said material being printed and which is independent of the diameter of said one mounted cylinder.

3,858,053

SLIDE CONTROL MECHANISMS FOR MACHINE TOOLS

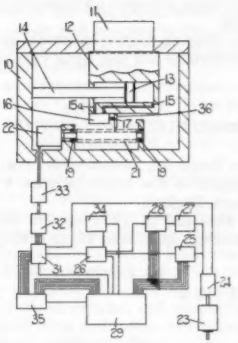
Alan Burnett, Coventry, England, assignor to Wickman Machine Tool Sales Limited, Coventry, Warwickshire, England

Filed June 20, 1973, Ser. No. 371,869

Claims priority, application Great Britain, June 22, 1972, 29218/72

Int. Cl. G01d *5/34*

U.S. Cl. 250—555 **7 Claims**



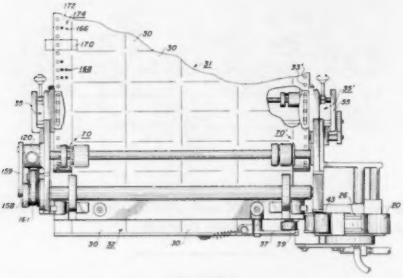
1. An electronic system for a machine tool slide control mechanism comprising an optical encoder which is driven from a main shaft of the machine and which provides output signals related to the speed of rotation, angular position and also the number of completed revolutions of the main shaft, said optical encoder output signals being transmitted to an electrical drive motor whereby the slide mechanism is actuated, the output of the optical encoder being in the form of two step-pulse output signals supplied to a direction sensor, the output of this being applied to a rate multiplier and thence to a multiplexer, the multiplexer receiving also a signal from a control pre-set for the required slide operation, signals from the multiplexer being supplied to a reversible counter, and an output from this being supplied to a digital analogue converter to provide power supply for the electrical drive motor.

3,858,054

COMMUTATOR DISK FOR ZIP CODE SORTING

Mark A. Hutner, Glenview, Ill., and Raymond A. Wilmes, Genoa City, Wis., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 1, 1973, Ser. No. 402,213
Int. Cl. G01n 21/30
U.S. Cl. 250—556 6 Claims



1. Control apparatus for segregating mailing pieces according to zip code or the like information associated with labels to be applied to each of the mailing pieces wherein the labels are contained in a commutator printout form of labels and feed mechanism is provided for reciprocally feeding the form of labels various distances, said apparatus comprising:

means for clocking signals representative of said zip code information, including an enable photocell and a clocking photocell;

a commutator cooperating with said signal clocking means to effect actuation thereof, said commutator first actuating said enable photocell upon movement in a first direction; and

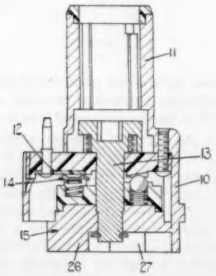
means for effecting relative reciprocal movement between said commutator and said signal clocking means.

3,858,055

COMBINED ELECTRICAL SWITCH AND LOCK ASSEMBLY

Steven John Tregurtha, Oswaldtwistle, near Accrington, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed July 25, 1973, Ser. No. 382,383
Claims priority, application Great Britain, July 25, 1972, 34685/72
Int. Cl. H01h 3/00
U.S. Cl. 307—10 R 3 Claims



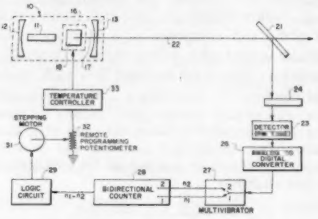
1. A combined electrical switch and lock assembly comprising in combination, a plurality of fixed electrical contacts, a rotor member, means mounting said rotor member for rotation, a key operated lock mechanism, means coupling said key operated lock mechanism to said rotor member whereby said rotor member can be rotated by said key operated lock mechanism, a movable electrical contact, means mounting said movable electrical contact for movement with said rotor member between a plurality of angular positions in relation to said fixed electrical contacts, a cam member, means mounting said cam member for rotation with said rotor member, to first, second, and third angular positions, first and second locking elements, means resiliently biassing said first and second locking elements into engagement with said cam member, said cam member having a profiled surface such that in said first angular position of said rotor member, said first locking element is urged by said cam member into a position in which, in use, it is adapted to resist operation of a control of a machine which is equipped with the combined electrical switch and lock assembly, and, said profiled surface of said cam member being such that when said cam member is in said second position then, in use, said first locking element is adapted to no longer resist operation of said control of said machine, and said profiled surface further being such that further movement of said cam member, into said third angular position, is resisted by said second locking element if said second locking element is held against movement in a direction opposite to that in which it is biassed by said biassing means.

3,858,056

MEANS AND METHOD FOR STABILIZED OPTIMIZED TEMPERATURE PHASE MATCHED OPTICAL PARAMETRIC GENERATION

Nathan T. Melamed, Pittsburgh, and John D. Feichtner, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 22, 1974, Ser. No. 435,548
Int. Cl. H01s 3/00
U.S. Cl. 307—88.3 10 Claims



1. In a method for generating an optical parametric beam in which the temperature of a nonlinear crystal can be varied in first and second opposite directions to increase the power output of said beam; the improvement comprising

A. continuously measuring the intensity of at least a portion of said beam to generate pulse signals having a rate at least proportional to the measured intensity;

B. continuously sampling said pulse signals during consecutive first and second periods;

C. counting the number of pulse signals measured during each first and second period and comparing said numbers;

D. adjusting the temperature in direct response to any difference in the number of pulse signals counted during said first and second periods; and

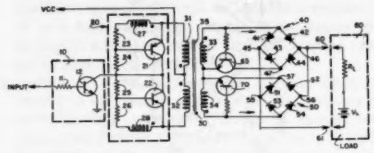
E. repeating steps C and D for each sampling period.

3,858,057

SOLID STATE RELAY

Jose V. Souto Martins, Arlington Heights, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 28, 1973, Ser. No. 419,822
Int. Cl. H03k 17/00
U.S. Cl. 307—254 3 Claims



1. A solid state relay for completing an external load circuit in response to an input signal, said relay comprising

a resistive input circuit for providing an input control signal in response to said input signal;

an oscillator circuit coupled to said input circuit and providing an a.c. electrical output in response to said input control signal;

a transformer having a primary winding coupled to said oscillator and a center tapped secondary winding;

first and second diodes coupled one to each side of said secondary winding in a full-wave rectifier configuration; a four diode bridge having first and second input terminals, first and second output terminals coupled across said external load circuit, and having said first input terminal coupled to said secondary winding; and

a control transistor coupled between the center tap of said secondary winding and the second input of said diode bridge,

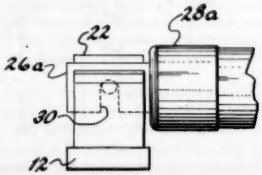
whereby, in response to an input signal which activates said oscillator, said control transistor couples said diode bridge to alternate sides of said secondary winding during alternate half cycles of said a.c. output of said oscillator thereby forward biasing said diode bridge rendering it conductive and completing said external load circuit.

3,858,058

REJECTOR-TYPE FUSE CLIP

Robert S. Tillson, Terryville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jan. 16, 1974, Ser. No. 433,828
Int. Cl. H01h 85/24; H01r 13/12, 13/64
U.S. Cl. 339—258 F 5 Claims



1. A fuse clip for a fuse cartridge with an end terminal including a recess, said fuse clip comprising:

clamping means comprising first and second clamping arms extending in a spaced, substantially parallel relationship to define therebetween a receiving slot for acceptance of the cartridge fuse end terminal,

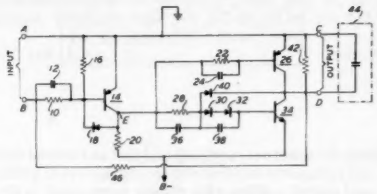
interference means disposed in said receiving slot for acceptance of the recess of the cartridge fuse end terminal upon its insertion in said receiving slot, and said first clamping arm being shorter than said second clamping arm, and said interference means being located adjacent the termination of said first clamping arm.

3,858,059

HIGH SPEED DRIVER CIRCUIT

Rakesh Khanna, Parsippany, N.J., assignor to Litton Business Systems, Inc., Orange, N.J.

Filed Aug. 1, 1973, Ser. No. 384,699
Int. Cl. H03k 5/01, 6/02
U.S. Cl. 307—264 3 Claims



1. A high speed driver circuit comprising:

input circuit means for receiving an input pulse signal;

means providing a source of first and second reference potentials;

first switch means coupled to said input circuit means and repsonsive to first and second pre-determined amplitude levels of said pulse signal for respectively assuming a first and second operating state;

second and third switch means each including a transistor having base, emitter, and collector electrodes, having a common output terminal and each responsive to the operating state of said first switch means for selectively providing a circuit path coupling to one or the other of said reference potentials in dependence on the operating state of said first switch means;

output circuit means coupled to said common output terminal and responsive to the switiched circuit path coupling of said second and third switch means for providing an output pulse signal corresponding to said received input signal; and

means providing a signal feedback path between said input and output circuit means;

the emitter electrodes of said transistors being respectively coupled to a separate one of said first and second reference potentials, and the collector electrodes being connected together and coupled to said output circuit means, said second and third switch means transistors being biased to operate as switches and selectively provide a conductive path from said output circuit means to said first or second reference potentials in response to whether said first switch means is in its first or second operating state.

3,858,060

INTEGRATED DRIVER CIRCUIT

Richard Arthur Kenyon, Underhill, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 7, 1973, Ser. No. 368,002
Int. Cl. G11c 11/40; H03k 3/33
U.S. Cl. 307—270 5 Claims

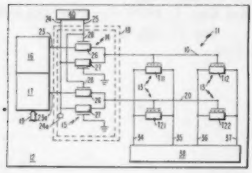
1. A driver circuit comprising,

a first device capable of sustaining a differential voltage of a first given value,

means coupled to said first device for applying a first differential voltage of said first given value to said first device, a second device capable of sustaining a differential voltage of a second given value,

means coupled to said second device for applying a second differential voltage of said second given value to said second device,

said first and second devices each being coupled to a single output,



means for selectively applying said first and second differential voltages to said first and second devices to produce at said output a differential voltage swing equal to the sum of the first and second voltages

and additional means coupled to said second device for discharging said output.

3,858,061

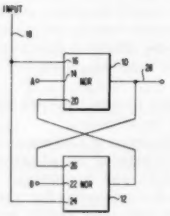
MULTIPLE SIZE GATES ON FET CHIPS

Robert G. Carpenter, and Maurice T. McMahon, Jr., both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,966

Int. Cl. H03k *3/26, 3/33;* **H01l** *11/00*

U.S. Cl. 307—279 **1 Claim**



1. In an integrated circuit including a plurality of FETs connected to form at least one circuit having more than one signal path, each signal path having different signal delays, the improvement providing equalization of the delays in the signal paths through said integrated circuit comprising:

a. at least one first FET in a first of said signal paths having a first gate electrode, said first gate electrode having a first predetermined size determining the inter-electrode capacitance of said first FET which, in turn, defines a first turn-on time for said first FET; and

b. at least one second FET in a second signal path having a second gate electrode, said second gate electrode having a second predetermined size different from said first predetermined size and determining the inter-electrode capacitance of said second FET which, in turn, defines a second turn-on time different from said first turn-on time for said second FET, said first and second turn-on times being chosen to equalize the delays in said first and second signal paths through said integrated circuit.

3,858,062

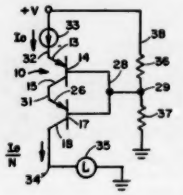
SOLID STATE CURRENT DIVIDER

William F. Davis, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 15, 1973, Ser. No. 332,834

Int. Cl. H01l *19/00*

U.S. Cl. 307—297 **11 Claims**



1. Solid state means for providing a predetermined ratio of an input current to an output current comprising:

a first transistor having a first emitter region, a first base region and a first collector region,

a second transistor having a second emitter region, a second base region and a second collector region,

input direct current source means, bias source means, output direct current to load means,

said first emitter region being connected to said input direct current source means,

said first and second base regions being connected together, said connected together first and second base regions being connected to said bias source means for forward biasing the junction formed by said first emitter and said first base during operation,

said first collector being connected to said second emitter; and

said second collector being connected to said output direct current to load means, output direct current flowing through said load means.

3,858,063

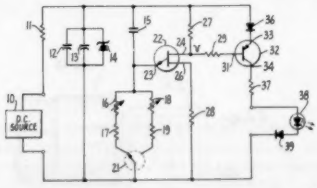
TIMED LIGHT PULSE GENERATOR

Jose A. Saleme, Sunnyvale, Calif., assignor to Redlake Corporation, Santa Clara, Calif.

Filed Apr. 2, 1973, Ser. No. 346,960

Int. Cl. H05b *37/00*

U.S. Cl. 307—311 **1 Claim**



1. A timed light pulse generator for use in marking photographic film with timing marks, comprising:

a pair of capacitors and a Zener diode connected in parallel as a filter network, said filter network being connected directly across a direct current source and a resistor connected in series;

an RC network connected directly across said filter network, said RC network consisting of a timing capacitor connected in series with a variable resistance network, said variable resistance network consisting of a pair of circuit branches each including a fixed resistor and a

variable resistor and switch means for selectively connecting one or the other of said circuit branches to one terminal of said filter network, the ends of said circuit branches remote from said switch means being connected to a common circuit point to which one terminal of said timing capacitor is also connected;

a unijunction transistor, the emitter electrode of said unijunction transistor being directly connected to said common circuit point, and each base electrode of said unijunction transistor being connected to one terminal of said filter network through an associated resistor, the one of said base electrodes serving as an output electrode having its associated resistor directly coupled to a terminal of said timing capacitor; and

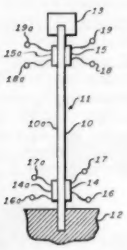
a transistor, said transistor having its base electrode connected to said output electrode of said unijunction transistor through a resistor, having its emitter electrode connected through a diode to the terminal of said timing capacitor remote from said common circuit point, and having its collector electrode connected to the terminal of said variable resistance network remote from said common circuit point through a series-connected combination of a resistor, a diode, and a light-emitting diode.

3,858,064

STABLE ACOUSTIC DELAY SURFACE WAVE MOTION TRANSDUCER SYSTEMS

Lloyd R. Schissler, Jamaican Plain, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 30, 1973, Ser. No. 393,111
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **14 Claims**



1. Transducer means comprising;

flexure means having first and second opposed flexible surface layer means for separately propagating respective first and second acoustic waves along first and second respective predetermined paths therein,

first and second exciter means for exciting and propagating said respective first and second acoustic waves along said first and second respective predetermined paths in response to respective first and second exciter electric signals,

first and second receiver means along said respective first and second predetermined paths for receiving and converting said respective first and second acoustic waves into respective first and second receiver electric signals, first and second respective driver circuit means for coupling said first receiver means to said first exciter means and for coupling said second receiver means to said second exciter means for forming, with said respective first and second opposed flexible surface layer means, first and second oscillatory driver circuit means oscillating at different respective first and second frequencies, at least said first oscillatory driver circuit means including:

phase detector means responsive jointly to the phases of said first respective exciter and receiver electric signals, and

tunable oscillation frequency dtermining means responsive to said phase detector means, and

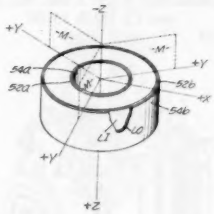
signal processor means jointly responsive to said first and second oscillatory driver circuit means for deriving a measure of the flexure of said flexure means from said first and second frequencies for supply to utilization means.

3,858,065

ANNULAR 3M CLASS PIEZOELECTRIC CRYSTAL TRANSDUCER

Howard C. Epstein, South Pasadena, Calif., assignor to Becton Dickinson Electronics Company, Pasadena, Calif.

Continuation-in-part of Ser. No. 103,036, Dec. 31, 1970, abandoned. This application July 24, 1972, Ser. No. 274,251
Int. Cl. H01v *7/02;* **H04r** *17/00*
U.S. Cl. 310—9.5 **14 Claims**



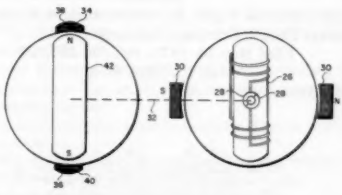
1. In a transducer of the shear type in which an electrical signal is developed across two parallel cylindrical surfaces of an annular piezoelectric element mounted to move relatively to each other in a direction parallel to such surfaces in response to force applied to at least one of said surfaces in said direction and in which means are provided for conducting such electrical signal to a utilization device responsive thereto, the improvement wherein said annular piezoelectric element comprises a piezoelectric crystal of the 3m class having its Z axis parallel to said surfaces.

3,858,066

NON-COMMUTATING SUPERCONDUCTING D. C. MACHINE

Robert G. Breckenridge, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 29, 1973, Ser. No. 346,221
Int. Cl. H02k
U.S. Cl. 310—40 **6 Claims**



1. A direct current machine comprising:

a multipoled, non-superconducting armature magnet,

a plurality of superconducting stator magnets disposed in predetermined spaced relation about the path of rotation of said armature magnet, said stator magnets being formed of hard, Type II superconductive material,

a timing magnet coupled for rotation with said armature magnet,

a plurality of magnetic switch means disposed in predetermined spaced relation about the path of rotation of said timing magnet and actuatable by said timing magnet,

said magnetic switch means comprising field windings formed of soft, Type I superconductive material, the magnetic field of said timing magnet being of sufficient strength so as to cause the soft superconductive material of a field winding to revert to the normal resistance state each time a pole of said timing magnet passes that field winding, and

a reversing circuit including said magnetic switch means for periodically reversing the polarity of the magnetic field between said armature magnet and said stator magnets.

3,858,067

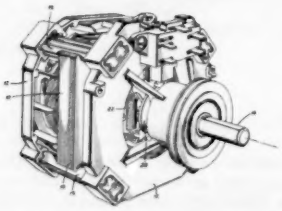
DYNAMOELECTRIC MACHINE

Charles W. Otto, De Kalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 246,219, April 21, 1972, abandoned. This application May 9, 1973, Ser. No. 358,589

Int. Cl. H02k *15/00*

U.S. Cl. 310—42 **23 Claims**



1. A dynamoelectric machine comprising a stator having winding means therein, a rotatable assembly disposed in the stator, at least one end shield for supporting the rotatable assembly; a plurality of means on the stator respectively having at least a portion for mounting with the end shield, means in the end shield for receiving the mounting means portions and into which they extend generally in spaced relation with at least a portion of the end shield about the receiving means, and metallic means solidified and contained generally within the receiving means and respectively interconnected between the mounting means portions and at least a portion of the receiving means for rigidly mounting the end shield and the stator.

3,858,068

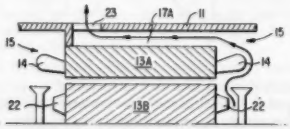
DYNAMOELECTRIC MACHINE HAVING VENTILATING MEANS

Howard Christian Ward, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 24, 1973, Ser. No. 363,728

Int. Cl. H02k *9/00*

U.S. Cl. 310—59 **7 Claims**



1. A dynamoelectric machine comprising:

a housing,

a stator core supported within said housing in spaced relation with respect thereto to define a ventilation region (16) that substantially separates all of the circumference of the core from the housing,

a plurality of partitions rigidly mounted between said core and said housing in spaced-apart relation peripherally about said core and extending axially of said core, said plurality of partitions cooperating with said housing and core to form a plurality of contiguous, separate paths through said ventilation region, in heat exchange relation with respect to each other, each of said partitions being formed of metal having good thermal conductivity and comprising a means for exchanging heat between the contiguous, separate paths, and

means for circulating cooling air and introducing it into said paths only at the respective ends thereof, said circulating air and the means for exchanging heat being effective to transfer heat between adjacent paths due to the flow in opposite directions of cooling air through adjacent ones of said contiguous paths, thereby to uniformly distribute heat along all of said paths and to maintain the temperature of air at both ends of said paths lower than the temperature at the middle of the paths.

3,858,069

EXCITER ASSEMBLY FOR ELECTRIC MACHINES WITH REVOLVING RECTIFIERS

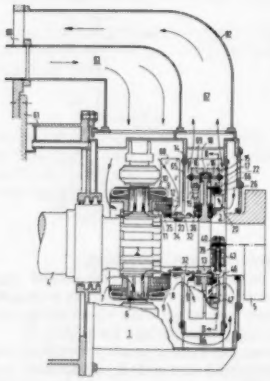
Heinrich Kuter, Wattenscheid, and Hans Lenting, Mulheim-Ruhr, both of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Mar. 9, 1973, Ser. No. 339,925

Claims priority, application Germany, Mar. 10, 1972, 2211810

Int. Cl. H02k *9/04*

U.S. Cl. 310—68 D **12 Claims**



1. Exciter assembly for an electric machine, such as a synchronous generator having a rotary shaft and an exciter winding, comprising an alternating-current exciter machine having an armature, a plurality of revolving rectifiers connectible between said armature and the exciter winding of the electric machine for feeding exciting current thereto, and a carrier wheel for said revolving rectifiers securable to the shaft of the electric machine, said carrier wheel comprising a disc-shaped hub, a pair of light-metal rings respectively mounted on both sides of said disc-shaped hub at the periphery thereof, said light-metal rings being insulated from said hub and secured to said hub by a bolt and by means of respective shoulders overlapping the periphery of said hub, and being shrink-fitted on said hub, each of said light-metal rings forming a direct-current pole carrying rectifier diodes that are directly threadedly secured thereto, and fuses insulatedly fastened to said rings.

3,858,070

BEARING CENTERING STRUCTURE FOR ROTARY ELECTRIC APPARATUS

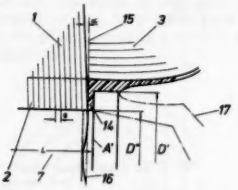
Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Overtoom, Amsterdam, Netherlands

Continuation of Ser. No. 285,111, Aug. 31, 1972, abandoned. This application Apr. 3, 1974, Ser. No. 457,400

Claims priority, application Netherlands, Nov. 19, 1969, 6917401

Int. Cl. H02k 5/16

U.S. Cl. 310—90 1 Claim



1. Rotary electric apparatus comprising a stator core consisting of a plurality of stator plates having slots to accomodate stator windings, said stator windings extending beyond the axial end faces of the stator plates at opposite ends of the stator core, the stator core defining a rotor chamber, a rotor mounted on a shaft for rotary motion relative to the stator, bearing means mounted on said shaft, bearing support means connecting said stator unit to said bearing means and molded guide member made of an electrically non-conducting material secured to the stator unit at opposite axial end faces thereof, each of said guide members sealing the end openings of the stator slots and in bonding engagement with the windings and each defining a seat for the bearing support member, each of said guide members being of an L-shaped cross section to provide an annular centering surface concentric with the rotor axis and truly radial abutment surfaces parallel to each other and disposed in planes perpendicular to the rotor axis and spaced apart an axial distance slightly greater than the overall length of the stator core, the vertical leg of said guide member terminating in an edge of a diameter coincident and aligned with the outer periphery of the rotor cavity.

3,858,071

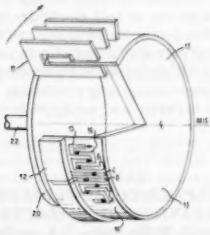
HIGH FREQUENCY, LOW INDUCTANCE GENERATOR

Brandt M. Griffing, Delray Beach, Fla., and Joseph A. Glockler, Jr., Kingston, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1970, Ser. No. 41,434

Int. Cl. H02k 1/22

U.S. Cl. 310—266 3 Claims



1. A brushless, high frequency alternator comprising:

a rotor having a plurality of metal pole pieces mounted on and in spaced relation around the periphery of said rotor for rotation therewith;

a stator having an annular field winding mounted thereon and passing through a cut out portion of said metal pole pieces of said rotor for exciting said metal pole pieces;

said stator including a zigzag armature winding mounted thereto in an air gap formed by said metal pole pieces of said rotor.

3,858,072

PLASMA TORCH WITH AXIAL SUPPLY OF THE STABILIZING GAS

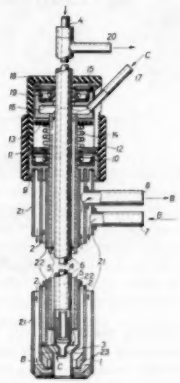
Vladimir Dembovsky, Ostrava, Czechoslovakia, assignor to Vysoka skola banska Ostrava, Ostrava, Czechoslovakia

Filed Feb. 6, 1973, Ser. No. 330,026

Claims priority, application Czechoslovakia, Feb. 9, 1972, 806-72

Int. Cl. H01j 17/26

U.S. Cl. 313—32 2 Claims



1. Plasma torch with axial supply of a stabilizing gas comprising in combination:

a torch head comprising a sleeve, a cover and a nut connecting both the sleeve and cover, the nut enabling an adjustment of the axial distance between the cover and the sleeve,

a nozzle forming the anode of the torch, connected by an internal tube and an external coaxial mantle with the sleeve,

a coaxial separating tube fixed to the sleeve, dividing the space between the internal tube and the external mantle into two coaxial annular spaces, communicating near the front face of the nozzle,

means for supply and removal of a cooling liquid to and from said annular spaces,

the separating tube extending into a distributing insert, leaving a narrow space at places adjacent to the operating surfaces of the nozzle,

means for securing the position of the distributing insert with respect to the nozzle while leaving free passages for the cooling liquid,

a distribution chamber arranged axially slidable within the torch head,

a tubular holder fixed to this distribution chamber and extending into the space of the internal tube,

a cathode fixed to the extremity of this holder,

an inlet tube for a cooling liquid for the cathode inserted into this holder dividing its space into two annular spaces communicating near the head of the cathode,

means for supply and removal of the cooling liquid to and from these annular spaces,

a tube of electrically insulating material fixed to said distributing chamber and engaging into the space between the internal tube and the holder of the cathode.

means for supplying a stabilizing gas into the space between the holder of the cathode and the tube of electrically insulating material,

the external surface of the cathode provided with longitudinal grooves limiting the passage of the stabilizing gas through the nozzle,

spring means urging the distributing chamber against the bottom of the cover of the torch head.

3,858,073

PLANE MULTI-DIGIT TYPE ELECTRIC DISCHARGE DISPLAY DEVICES

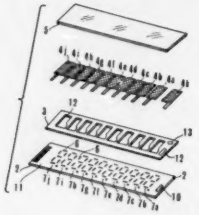
Masaharu Kohyama; Akio Miyamoto; Satoshi Kobayashi, and Mikio Kanazaki, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 6, 1972, Ser. No. 295,550

Claims priority, application Japan, Oct. 6, 1971, 46-77873

Int. Cl. H01j 7/40

U.S. Cl. 313—54 **6 Claims**



1. A plane scanning multi-digit type electric discharge display device comprising an insulator substrate, a plurality of pattern display units arranged side-by-side relationship on said insulator substrate, each display unit including a plurality of segment electrodes which are arranged in a predetermined pattern, a plurality of electrically isolated counter electrodes respectively confronting said pattern display units, and an upper substrate, at least the portions of said counter electrodes and said upper substrate confronting said pattern display units being transparent, and a common envelope containing pattern display units, and a single discharge sustaining electrode adapted for constantly discharging and located near an end pattern display unit at the end from which scanning is to be commenced.

3,858,074

PHOTOELECTRIC TRANSDUCER ELEMENT INCLUDING A HETEROJUNCTION FORMED BY A PHOTOELECTRIC TRANSDUCER FILM AND AN INTERMEDIATE FILM HAVING A LARGER ENERGY GAP THAN THE PHOTOELECTRIC TRANSDUCER FILM

Masakazu Fukai, Nishinomiya; Shinji Fujiwara, Toyonaka; Hiroyuki Serizawa, Katano; Osamaru Eguchi, Osaka, and Yukimasa Kuramoto, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma-shi, Osaka, Japan

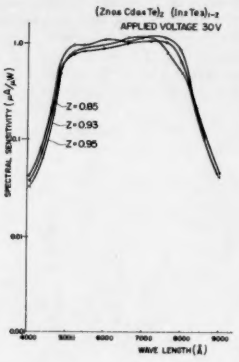
Filed Nov. 6, 1972, Ser. No. 304,050

Claims priority, application Japan, Nov. 9, 1971, 46-89622; Dec. 29, 1971, 47-3265; Sept. 25, 1972, 47-96428

Int. Cl. H01j 39/06; H01l 9/00

U.S. Cl. 313—94 **11 Claims**

1. A photoelectric transducer element and a target for an image pickup tube using said element, comprising a photoelectric transducer film, a transparent conductive film, a material interposed between said photoelectric transducer film and said transparent conductive film, and a heterojunction of said photoelectric transducer film and said material, said material having a larger energy gap than said photoelectric transducer film, said photoelectric transducer film containing $Zn_yCd_{1-y}Te$ ($0.1 \quad y \quad 0.9$) as a main component, and said



material containing ZnS_xSe_{1-x} ($0 \quad x \quad 1$) as a main component.

3,858,075

LOW PRESSURE MERCURY VAPOR DISCHARGE LAMP

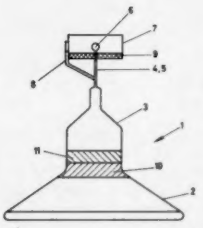
Rolf Herrmann, Sauerlach, and Gunther Sohring, Munich, both of Germany, assignors to Patent-Treuhand-Gesellschaft fur electrische Gluhlampen mbH, Munich, Germany

Filed Jan. 16, 1974, Ser. No. 433,773

Claims priority, application Germany, Feb. 6, 1973, 2305753

Int. Cl. H01j 61/28

U.S. Cl. 313—178 **10 Claims**



1. In a low-pressure mercury vapor discharge lamp comprising an elongated vitreous envelope having electrodes sealed into its ends, at least one of said electrodes being connected to an outwardly flared stem sealed to one end of said envelope and said stem being partially coated with an amalgam-forming metal which becomes the main amalgam during lamp operation, the improvement comprising positioning a ceramic coating on said stem between said amalgam-forming metal and said electrode.

3,858,076

VACUUM-TYPE CIRCUIT INTERRUPTER WITH INTERLEAVING SPIRAL ELECTRODES

Graham R. Mitchell, Willingboro, N.J., assignor to General Electric Company, Philadelphia, Pa.

Filed May 11, 1973, Ser. No. 359,497

Int. Cl. H01j 17/04

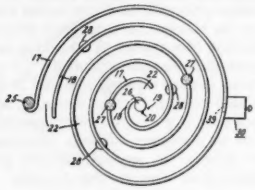
U.S. Cl. 313—217 **8 Claims**

1. A vacuum-type circuit interrupter comprising:

a. a highly evacuated envelope provided with spaced-apart opposed electrical terminals for connection to an electric circuit,

b. spaced-apart first and second electrode members within said envelope respectively electrically connected to said spaced-apart terminals and between which a high voltage is applied during circuit interruption,

b_1. each of said electrode members comprising a metal sheet in the form of a spiral wound in turns about a longitudinal axis via a path that generally progressively recedes from said longitudinal axis as the path winds about said axis, said sheet having a width much greater than its thickness, the width of the sheet extending generally parallel to said longitudinal axis and the thickness of the sheet extending generally normal to said longitudinal axis,



b_2. said spirals being so positioned that their longitudinal axes are generally parallel to each other and their turns interleave in spaced relationship to each other, thereby defining an interelectrode gap of spiral form between said electrode members,

c. means within said envelope for supplying an electron-ion plasma to said interelectrode gap for causing the voltage between said electrodes to establish an arc discharge across said interelectrode gap,

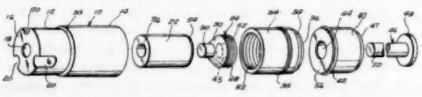
d. and means for forcing most of the current that flows through said discharge to follow a path extending between said terminals through said electrodes that enters one of the electrodes from its associated terminal near the outer end of its spiral and leaves the other of the electrodes for its associated terminal near the inner end of the spiral of said other electrode.

3,858,077

GAS TUBE TRANSIENT VOLTAGE PROTECTOR FOR TELECOMMUNICATION SYSTEMS

Albert Bazarian, Coltsneck, and William Robert Kineyko, Jackson, both of N.J., assignors to General Instrument Corporation, Newark, N.J.

Filed Nov. 20, 1973, Ser. No. 417,592
Int. Cl. H01j *17/04*; **H02h** *1/00*
U.S. Cl. 313—217 **36 Claims**



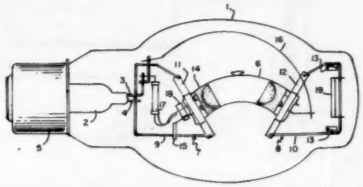
1. A transient voltage protector comprising a hollow generally cylindrical housing having an open end and a closed end, a first insulating body mounted in said housing adjacent said closed end, an outer electrode in the shape of a hollow cylinder mounted in said housing between said open end and said first insulating body, an inner electrode mounted on said first insulating body within said outer electrode and spaced therefrom, a second insulating body adapted to engage said open end and having a bore therethrough and an electrical connecting element having an end portion and a body portion, said end portion being accessible to the exterior surface of said second insulating body and said body portion extending through said bore and engaging said inner electrode to impart physical stability to said inner electrode as well as to provide an electrical connection therewith.

3,858,078

METAL HALIDE DISCHARGE LAMP HAVING AN ARCHED ARC TUBE

Frederick Koury, Alexandria, N.H., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed July 9, 1973, Ser. No. 377,442
Int. Cl. H01j *61/33*
U.S. Cl. 313—220 **6 Claims**



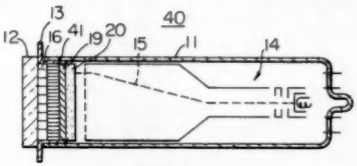
1. A metal halide arc discharge lamp comprising: an outer envelope; an arched arc tube, having electrodes at each end thereof, disposed within said envelope, said arc tube containing a fill including mercury, metal halide and an inert gas, the arched shape of said arc tube being such that during normal horizontal operation with the arch of the arc tube uppermost, the arc discharge does not extend to the walls of the arc tube and said discharge is substantially equidistant from the walls of the arc tube; and means to energize said arc tube.

3,858,079

COLOR CAMERA TUBE HAVING A COLOR STRIP FILTER

Hiroshi Miyama, and Kaoru Tomii, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Dec. 26, 1972, Ser. No. 318,478
Claims priority, application Japan, Dec. 27, 1971, 46-47625
Int. Cl. H01j *31/26*
U.S. Cl. 313—372 **1 Claim**



1. A color camera tube, which comprises:

an evacuated envelope having a transparent faceplate sealed thereto and closing an end thereof;

an electron gun assembly placed within said envelope toward another end thereof, for emitting an electron beam toward said faceplate;

a color strip filter mounted within said evacuated envelope on the inner surface of said transparent faceplate facing said electron gun assembly;

a thin fibre optics plate mounted on said color strip filter within said evacuated envelope and facing said electron gun assembly;

a transparent electrically conductive thin film mounted on said optics plate and electrically led to the outside of said envelope; and

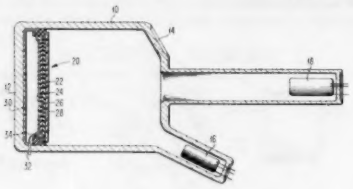
a photoconductive layer mounted on said conductive thin film.

3,858,080

TARGET ASSEMBLIES ESPECIALLY FOR SINGLE CHAMBER DEFORMOGRAPHIC STORAGE DISPLAY TUBES

Robert James Wohl, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 17, 1973, Ser. No. 398,288
Int. Cl. H04n *3/16*
U.S. Cl. 313—394 **12 Claims**



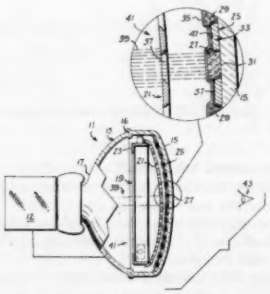
1. A deformographic storage display tube having:
an evacuated electron tube envelope having a transparent faceplate portion, and an electron gun arranged within said envelope at a location permitting the beam of electrons emanating from the electron gun to impinge on said faceplate portion, and comprising
a target assembly arranged at the inner surface of said faceplate portion of said envelope and including:
a transparent conductive film deposited on the inner surface of said faceplate portion of said envelope;
an electrostatically deformable solid member arranged over said conductive film; and
a compatibly deformable photoreactive layer arranged on said deformable member.

3,858,081

CATHODE RAY TUBE SCREEN STRUCTURE UTILIZING ADJUVANT EXCITATION

Charles H. Rehkopf, and Kenneth Speigel, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 7, 1973, Ser. No. 357,931
Int. Cl. H01j *29/20, 29/32, 29/28, 29/30*
U.S. Cl. 313—467 **4 Claims**



1. A color cathode ray tube comprising:
an enclosing envelope having a glass receiving panel;
a multiplex screen structure disposed on the interior surface of said receiving panel and including: a first apertured webbing of a substantially opaque electrical conductive material formed contiguous to the inner surface of said panel; a second apertured webbing formed of an electron-responsive ultraviolet emissive phosphor material superposed in said first apertured webbing being in alignment to provide a multitude of defined windows therethrough; said ultraviolet emissive phosphor material being selected from the group consisting essentially of europium-activated strontium fluoroborate and lead-activated barium mesosilicate; a patterened array of at least two repetitive phosphor elements disposed in a contiguous manner over the window areas of said second apertured webbing, each of said phosphor elements being of a size larger than the related window area, said pattern of phosphor elements being of materials responsive to excitation by both electron and ultraviolet energy and differing from the phosphor material comprising said second webbing, the ultraviolet emissive phosphor of said second webbing providing adjuvant excitation energy to at least one of said related phosphor elements during tube operation to increase the luminescent brightness thereof, and a metallic reflecting film applied as a backing over said pattern of spaced-apart phosphor elements;
an apertured pattern member oriented in spaced relationship to said multiplex screen structure; and
at least one source of electron energy positioned within said envelope in a manner to beam electrons through said pattern member to impinge discrete portions of said multiplex screen structure therebeyond.

3,858,082

WARM WHITE LAMP WITH NORMAL OUTPUT AND IMPROVED COLOR RENDITION

William A. Thornton, Jr., Cranford, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

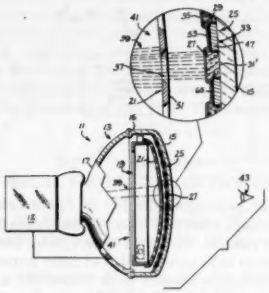
Continuation-in-part of Ser. No. 96,744, Dec. 10, 1970, which is a continuation-in-part of Ser. No. 742,291, July 3, 1968, abandoned. This application Aug. 10, 1972, Ser. No. 279,562
Int. Cl. H01j *1/63*
U.S. Cl. 313—487 **8 Claims**

1. A luminescent discharge lamp which will efficiently generate white light of a quality which will provide illuminated objects with a color appearance reasonably representative of the color appearance of said objects under natural light, said lamp comprising:
a. a light generating medium which is a substantially homogenous mixture of phosphors, said mixture by constituent weight percent substantially comprising:
i. 3–40 percent of a blue-emitting phosphor consisting essentially of at least one of strontium chloroapatite activated by divalent europium, alumino silicate activated with divalent europium, and calcium-barium-magnesium silicate activated with divalent europium;
ii. 20–50 percent of a green-emitting phosphor consisting essentially of at least one of zinc silicate activated with manganese, zinc germanate activated with manganese, zinc silicogermanate activated with manganese, yttrium silicate activated with terbium and zinc borate activated with terbium; and
iii. 10–70 percent of a red-emitting phosphor consisting essentially of at least one of yttrium oxide activated with trivalent europium, lithium indate activated with trivalent europium, yttrium vanadate activated with trivalent europium, and yttrium phosphate vanadate activated with trivalent europium; and
b. means for energizing said mixture of phosphors to a visible-light-generating condition.

3,858,083
CATHODE RAY TUBE SCREEN STRUCTURE

Charles H. Rehkopf, and Kenneth Speigel, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 7, 1973, Ser. No. 357,942
Int. Cl. G03c *5/00;* **H01j** *29/32*
U.S. Cl. 313—472 **4 Claims**



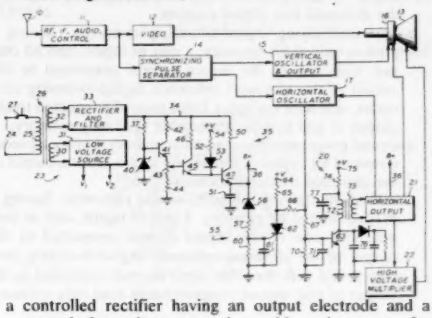
1. A color cathode ray tube comprising:
an enclosing envelope having a glass viewing panel;
a multiplex screen structure disposed on the interior surface of said panel including: a first apertured webbing of a substantially opaque electrically conductive material formed contiguous to the inner surface of said panel; a second apertured webbing formed of a substantially opaque material having a mean particle size within the range of substantially 0.10 to 0.20 microns superposed on said first apertured webbing to provide a duo-webbing structure, said second webbing having interstitial regions areally greater than those of said first webbing to define apertures of dimensions smaller than those in said first webbing, the superposing of said smaller second webbing apertures over the larger first webbing apertures provides a narrow mat-like encompassment within the delineating perimeter of each of said first webbing apertures to define a multiplicity of clear reduced-in-size windows in said duo-webbing structure, the inner defining edge of each window encompassment being substantially contiguous with the glass surface of said viewing panel; said duo-webbing being impregnated with a coating of a compatible binder solution to provide a durable medium thereto; a patterned color screen in the form of a spaced-apart multitude of at least two repetitive phosphor elements disposed over said apertured webbing thereof each window in the webbing structure has a phosphor element thereover; and a metallic reflecting film applied over said spaced-apart phosphor elements and the interstitial areas of said second webbing exposed therebetween;
an apertured pattern member positioned in spaced relationship to said multiplex screen structure; and
at least one source of electron energy oriented within said envelope to beam electrons through said apertured pattern member to impinge said multiplex screen therebeyond.

3,858,084
VOLTAGE PROTECTION CIRCUIT

David Eugene Manners, Alexander, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 11, 1973, Ser. No. 359,614
Int. Cl. H01j *29/70*
U.S. Cl. 315—387 **11 Claims**

1. In a television receiver having horizontal deflection circuitry including drive circuitry, protection circuitry comprising:
a source of energizing voltage connected to said horizontal deflection circuitry for providing an energizing voltage thereto;
sensing means connected to said source for providing a control signal in response to voltages from said source exceeding a threshold;

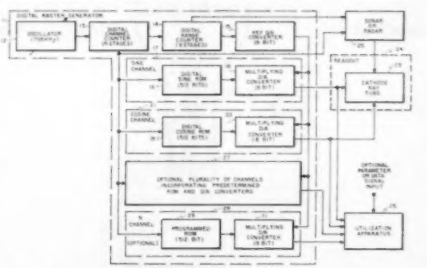


a controlled rectifier having an output electrode and a control electrode connected to said sensing means for switching from a first conducting condition to a second conducting condition in response to said control signal; and
means connecting said output electrode of said controlled rectifier to said drive circuitry for altering the bias thereof when said sensing means provides said control signal to bias said drive circuitry in an inoperative condition.

3,858,085
DIGITAL RASTER GENERATOR

Clell A. Dildy, Jr., and Arthur K. Dettbarn, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 9, 1973, Ser. No. 377,886
Int. Cl. H01j *29/70*
U.S. Cl. 315—367 **17 Claims**



1. An apparatus of the character described, comprising in combination:
means for producing a basic timing signal having a predetermined frequency;
a programmable first digital counter, having a predetermined number of stages, a clock input, a trigger output, and an address output, with the clock input thereof connected to the output of said basic timing signal producing means and with the address output thereof adapted for being connected to a predetermined multi-channel utilization apparatus;
a second digital counter, having a predetermined number of stages, a data signal input, a data signal output, and an actuation trigger output for being connected to an actuation input of the aforesaid predetermined multi-channel

utilization apparatus, with the data signal input thereof connected to the trigger output of said programmable first digital counter;

a reference digital-to-analog converter, having a predetermined bit capacity, connected to the data signal output of said second digital counter;

a first programmable read only memory, having a predetermined bit capacity, connected to the address output of the aforesaid first digital counter;

a first multiplying digital-to-analog converter, having a predetermined bit capacity, a pair of inputs, and an output, with one of the inputs thereof connected to the output of the aforesaid reference digital-to-analog converter, and with the other input thereof connected to the output of said first programmable read only memory;

a second programmable read only memory, having a predetermined bit capacity, connected to the address output of the aforesaid first digital counter; and

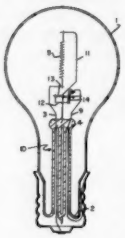
a second multiplying digital-to-analog converter, having a predetermined bit capacity, a pair of inputs, and an output, with one of the inputs thereof connected to the output of the aforesaid reference digital-to-analog converter, and with the other input thereof connected to the output of said second programmable read only memory.

3,858,086

EXTENDED LIFE, DOUBLE COIL INCANDESCENT LAMP

Warren A. Anderson, Danvers; William M. Labadini, Salisbury, and Edmund M. Passmore, Wilmington, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Oct. 29, 1973, Ser. No. 410,878
Int. Cl. H01j *7/44, 13/46, 17/34*
U.S. Cl. 315—49 **5 Claims**



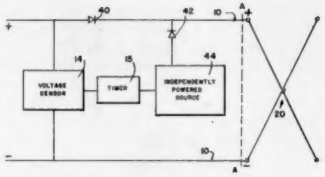
1. An incandescent lamp comprising: a gas filled glass bulb sealed at its lower end to the flare of a stem press glass mount; a screw base, having a center contact, attached to the lower end of said bulb; two lead-in wires extending through the stem press of said mount, one of said lead-in wires being electrically connected to said center contact and the other being electrically connected to the rim of said screw base; a coiled tungsten wire filament disposed within said bulb and electrically connected between said two lead-in wires; an inrush current limiting refractory metal wire coil in series with said filament and a thermal switch in parallel with said wire coil, said switch operative to electrically short out said wire coil upon attainment thereof of a predetermined elevated temperature and to maintain said wire coil shorted out during lamp operation.

3,858,087

CIRCUIT FOR PROLONGING THE LIFE OF FLUORESCENT LAMPS

Harry W. Tomsky, Bronx, and Harry G. Parke, Brooklyn, both of N.Y., assignors to CML-Macarr, Inc., Edison, N.J., by said Harry W. Tomsky

Filed June 19, 1973, Ser. No. 371,414
Int. Cl. H05b *37/00, 41/46*
U.S. Cl. 315—86 **6 Claims**



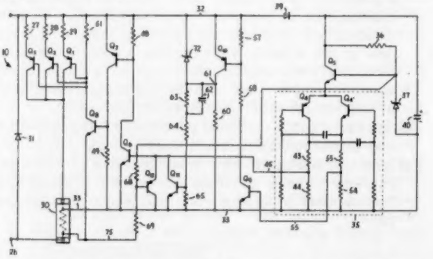
1. A circuit for prolonging the life of fluorescent lamps operated from a main source of direct current operating potential subject to random, unwanted interruption, comprising input means adapted to be connected at an input terminal with the source; output means adapted to be connected at an output terminal with the lamps; first unidirectional means connected at one end to said input terminal and at the other end to said output terminal for supplying said lamps with operating potential from said main source for normal operation; an auxiliary direct current power source having a voltage less than that of the main source but greater than the extinction voltage of the lamps; and second unidirectional means connected at one end of said auxiliary source and at the other end to said output terminal, said second unidirectional means cooperating with said first unidirectional means for supplying full operating potential to the lamps when the main source is operative and for supplying said lesser operating potential to the lamps from said auxiliary source in response to the occurrence of a random, unwanted interruption of main source whereby the lamps are precluded from becoming extinguished upon interruption of the main source.

3,858,088

D. C. FLASHER

John J. Scarpino, Garden City, and John H. Greig, Wantagh, both of N.Y., assignors to Hope-Tronics, Limited, Garden City, N.Y.

Filed June 15, 1973, Ser. No. 370,529
Int. Cl. H05b *37/02, 41/30*
U.S. Cl. 315—200 A **13 Claims**



1. A D.C. Flasher circuit for connection in series into a series connected circuit path of electrical conduction including a load and a source of D.C. potential to cause alternate opening and closing of the circuit path; the flasher circuit having first and second connectors for connecting the flasher in series connection only into said circuit path of electrical conduction, said connectors defining the only means for electrical connection of said flasher circuit into said circuit path

of electrical conduction, output transistor means having a current conduction path connected in series between the connectors, means connected with the output transistor means for controlling the output transistor means to cause conduction and nonconduction of the output transistor means, timing circuit means connected with the controlling means for timing the rate of conduction and nonconduction of the output transistor means, circuit voltage supply means for deriving a stabilized voltage from voltage present across the connectors when the output transistor means is nonconductive, and means connected with the voltage supply means for establishing a substantially stable voltage of a predetermined value between circuit points in the flasher circuit to provide transistor operating potentials independent of ground, whereby the flasher circuit is operable upon connection between two ungrounded points in the path of electrical conduction to the exclusion of any other electrical connection

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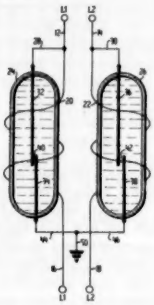
3,858,089

ELECTRICAL PROTECTIVE DEVICE USING A REED RELAY

Carleton H. Poindexter, Bensenville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 23, 1973, Ser. No. 408,348
Int. Cl. H02h *3/10*
U.S. Cl. 317—16 **7 Claims**



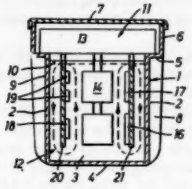
1. A device for protecting electrical equipment from an abnormal voltage or current appearing on an input line thereto, which comprises: means for enclosing a pair of electrically conductive blades positioned in a predetermined spatial relationship, wherein said enclosing means comprises a sealed chamber consisting of an elongated capsule of substantially cylindrical shape; a first external lead connected between one of said blades and said input line; a second external lead connected between the other of said blades and ground; each of said blades being affixed to an opposite end of said elongated capsule and each extending longitudinally past the center of said capsule, to form an overlapping juxtaposed configuration, said blades in their normal unactivated state overlapping and forming a gap between each other; means comprising an ionizable gas capable of sustaining an ionization current flow, contained within said enclosing means, for producing a discharge between said overlapping portion of said blades in response to said abnormal voltage; means comprising a coil electrically connected in series between said first external lead and said electrical equipment, and surrounding said capsule so that the magnetic field from said coil encompasses said capsule, operated to produce a magnetic field in response to said abnormal current to cause said pair of blades at their center overlapping portions to contact one another.

3,858,090

OIL-COOLED ELECTRICAL APPARATUS WITHDRAWABLE FROM AN OUTER CASING FOR INSPECTION AND REPAIRS

Kjeld Lehmann, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 12, 1973, Ser. No. 415,118
Claims priority, application Germany, Nov. 14, 1972, 2255646
Int. Cl. H05k *7/20*
U.S. Cl. 317—100 **2 Claims**



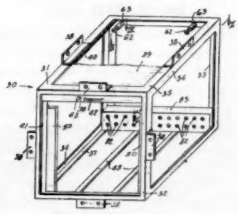
1. Electrical apparatus comprising an upwardly open casing, an assembly insertable into and withdrawable from said casing, said assembly including an oil cooled lower unit and an upper control unit, means for suspendingly supporting said assembly in said casing, said lower unit including two vertically extending plates disposed in parallel relation to each other and in spaced relation to the inner walls and floor of said casing, said plates having electrical components mounted on their mutually facing sides, said casing being filled with oil to completely immerse said lower unit, said upper control unit having frame means suspended therefrom, said plates being hingedly mounted on said frame means for pivotal movement about a vertical axis.

3,858,091

INTERCHANGEABLE PLUG-IN MODULAR APPLIANCE UNIT SYSTEM

Thomas A. Wilkinson, 123 Illinois Ave., Morris, Ill. 60450

Filed Sept. 6, 1972, Ser. No. 286,772
Int. Cl. H02b *1/04*
U.S. Cl. 317—120 **15 Claims**



1. In a plug-in modular appliance unit system:
a mount having a forwardly opening appliance-receiving chamber therein;
means on the mount by which it is attached to a supporting structure;
a plurality of separate and individual modular utility appliance units each of which has a housing providing a storage space therein and a front end wall provided with an access opening into the space, each housing carrying at least one electrical device accessible at the front of the unit for performing a utilitarian function;
said modular appliance unit housings being selectively and interchangeably received in said chamber by pushing the

selected unit rearwardly through the opening into the mount chamber;

means on said mount and on said unit housings to stop inward movement of the selected unit into the mount chamber with the front end wall of the selected unit visually and manually accessible at the mount chamber opening so that access can be had into said storage space within the selected unit and access can be had to said electrical device of the selected unit;

a plurality of separable electrical connectors carried by said mount within said chamber, certain of said connectors being electrically connected with a power source and other of the connectors being connected with at least one selected electrical utility device located outside of said mount;

each of said units carrying separable electrical connectors which are oriented in a pattern in accordance with the individual functions of that unit;

the separable electrical connectors of each of the units including certain ones for connection with the power source separable connectors of the mount carried connectors for energizing the electrical device of the unit;

at least certain of the units having additional separable connectors engageable in arming relation selectively with said mount carried connectors connected with a selected outside electrical utility device;

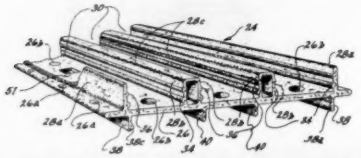
and the separable connectors of the selected unit received in the mount chamber effecting electrical connection with said mount carried power source connectors and selectively with those mount carried connectors which in addition match the individual pattern of the connectors carried by selected unit and thereby effecting electrical arming connection exclusively with only said outside electrical device connected with the selected mount carried connectors, and leaving other of the mount carried connectors unused until other of the units having different patterns of connectors for arming connection with other selected outside utility devices are selectively and interchangeably inserted into said mount chamber.

3,858,092

SWITCHBOARD WITH IMPROVED BUSBAR MOUNTING AND LOAD STRAP FEED-THROUGH PROVISIONS

William Francis Olashaw, Plainville, and Roger Thomas Wilbur, Bristol, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,373
Int. Cl. H02b *1/20*
U.S. Cl. 317—120 **17 Claims**



1. An electrical switchboard comprising, in combination:

A. a frame;

B. at least one insulative mounting member including

1. a base plate having lateral marginal portions mounting said member to said frame,

2. a plurality of spaced, parallel ribs outstanding from one side of said base plate to define a plurality of elongated, side-by-side channels, and

3. retainer means comprising an elongated ridge formed in each opposed rib surface adjacent to and extending parallel with the channel bottoms;

C. a plurality of spacers, each having opposed grooved edges engaging said elongated ridges to capture said spacers in said channels;

D. an elongated busbar disposed in each said channel in overlying relation with said spacers; and

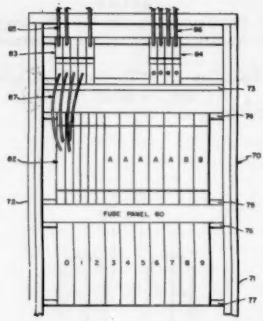
E. bolts threadedly engaging said spacers thereby clamping said busbars to said spacers, thus mounting said busbars to said member.

3,858,093

ARRANGEMENT FOR COMBINING HIGH AND LOW LEVEL SIGNALS WITHIN A SINGLE FRAME WITH A NOISE SEPARATING FUSE PANEL

Truman R. Mila, Batavia, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 14, 1973, Ser. No. 397,569
Int. Cl. H02b *1/18*
U.S. Cl. 317—122 **2 Claims**



1. In a common control communication switching system including both electronic and electromechanical equipment, the communication between said two types of equipment being by means of high and low level signals, an arrangement for combining said electronic and electromechanical equipment within a single frame in a fashion such as to provide a physical separation and noise protection between said two types of equipment comprising a frame supporting said equipment, a fuse panel effectively dividing said frame into an upper portion and a lower portion and being of a material to effectively electrically insulate said upper and lower portions, said electronic equipment being disposed within said upper portion and said electromechanical equipment being disposed within said lower portion, thereby effecting a physical separation between said two types of equipment, and cabling electrically interconnecting said electronic equipment disposed across the front of said electronic equipment, and cabling electrically interconnecting said electromechanical equipment disposed across the rear of said electromechanical equipment, whereby the electrical integrity is preserved to prevent noise from passing from one type of equipment to the other.

3,858,094

ELECTRIC SYSTEM INCLUDING TWO LOADS ARRANGED REMOTELY FROM EACH OTHER

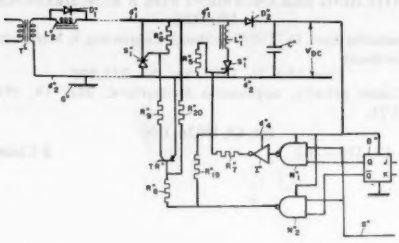
Leland J. Hanchett, Jr., 211 Ridge St., Winchester, Mass. 01890

Filed Dec. 26, 1973, Ser. No. 428,510
Int. Cl. H01h *47/00*
U.S. Cl. 317—137 **12 Claims**

1. An electric system including

a. a power supply transformer having a primary circuit and having a secondary circuit;

b. a first load energized by said secondary circuit of said transformer;
c. a first solid-state switch including a control circuit and arranged in series with said first load;
d. a second load energized by said secondary circuit of said transformer;
e. a second solid-state switch including a control circuit and arranged in series with said second load;

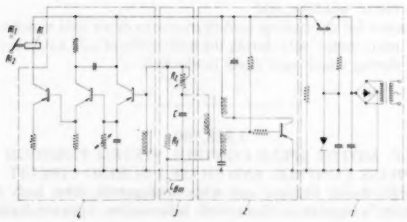


f. a rectifier energized by said secondary circuit of said transformer;
g. a third switch connected to apply a signal derived from the output voltage of said rectifier to said control circuit of said first solid-state switch; and
h. a fourth switch connected to apply a signal derived from the output voltage of said rectifier to said control circuit of said second solid-state switch.

3,858,095
PROTECTIVE CIRCUIT ARRANGEMENT FOR BAND CUTTER MACHINES

Wolfgang Friemann, Bayreuth, and Josef Proschka, Stadtsteinach, both of Germany, assignors to Adolf Riedl OHG, Bayreuth, Germany

Filed Aug. 28, 1973, Ser. No. 392,276
Int. Cl. H01h *47/12*
U.S. Cl. 317—146 **11 Claims**

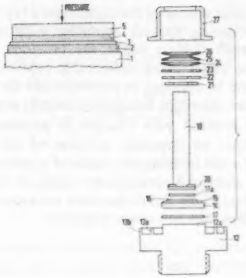


1. A protective device for use in cutting machines having a moving cutting member comprising:
safety circuit means, responsive to touching of the cutting member by an operator, for generating an output signal; and
braking means electrically connected to said safety circuit means for substantially instantaneously stopping the cutting member in response to said generated output signal of said safety circuit means.

3,858,096
CONTACT MEMBER FOR SEMICONDUCTOR DEVICE HAVING PRESSURE CONTACT

Friedrich Kuhrt, and Horst Schreiner, both of Nurnberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation of Ser. No. 871,748, Nov. 13, 1969, which is a continuation of Ser. No. 559,254, June 21, 1966, abandoned. This application Aug. 4, 1972, Ser. No. 277,925
Claims priority, application Germany, June 22, 1965, 97721
Int. Cl. H01d *3/00;* **H01l** *5/00*
U.S. Cl. 357/79 **2 Claims**



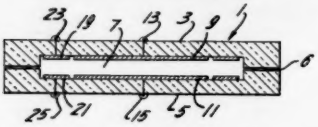
1. A semiconductor device comprising a semiconductor component having two electrodes; pressure means for maintaining said electrodes in pressure contact with said semiconductor component; a housing enclosing said semiconductor component, said electrodes and said pressure means in gas-tight manner, said housing having portions with good thermal electrical conducting characteristics and said pressure means pressing said semiconductor component and said electrodes to portions of said housing; electrical insulating means electrically insulating the portions of the housing which are in thermal and electrical contact with one of said electrodes from the portion of said housing which is in thermal and electrical contact with the other of said electrodes whereby at least one of said electrodes is held in electrical and thermal contact under pressure with the respective portion of said housing unbonded and by pressure only; and a contact member positioned between said one of said electrodes and said portion of said housing and held in electrical and thermal contact under pressure between said one of said electrodes and said portion of said housing, said contact member comprising sintered material having good thermal and electrical conductivity characteristics and a porosity of 2 to 40 percent, said contact member comprising lubricating material selected from the group consisting of graphite, molybdenum (IV) sulphide and tungsten selenide.

3,858,097

PRESSURE-SENSING CAPACITOR

William Ronald Polye, River Edge, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 26, 1973, Ser. No. 428,476
Int. Cl. H01g 7/00
U.S. Cl. 317—248 7 Claims



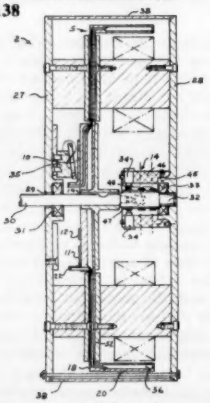
1. A pressure transducer of the capacitance type comprising a hollow body having spaced opposing walls of insulating material supported at their edges, the portions of the walls spaced from the edges being deflectable relative to one another in response to changes in pressure and the portions of the walls adjacent the edges being substantially nondeflectable relative to one another with changes in pressure, electrical conducting means on opposing surfaces of the deflectable portions of said walls forming the plates of a pressure sensitive capacitor, and electrical conducting means on opposing surfaces of the substantially nondeflectable portions of said walls forming the plates of a reference capacitor.

3,858,098

DYNAMOELECTRIC CONTROL SYSTEM AND MOTOR THEREFOR

John S. C. Htsui, Hazelwood, Mo., assignor to Emerson Electric Co., St. Louis County, Mo.

Filed Sept. 7, 1973, Ser. No. 395,187
Int. Cl. H02k 29/00
U.S. Cl. 318—138 11 Claims



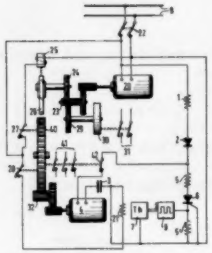
1. A disc armature assembly for a dynamoelectric machine comprising:
a disc shaped armature surface, said armature surface having a central opening in it;
a continuous winding formed on said armature surface;
a shaft mounted on said armature surface through said opening; and
a skirt extending outwardly from said armature surface, parallel to said shaft, said armature surface and said skirt being L-shaped in cross section.

3,858,099

SWITCHING ARRANGEMENT FOR A SYNCHRONOUS MOTOR

Konstantin Apel, D-7758 Meersburg, Lehrenweg 8, Meersburg, Germany

Filed May 16, 1972, Ser. No. 253,800
Claims priority, application Switzerland, May 19, 1971, 7353/71.
Int. Cl. H02p 5/00
U.S. Cl. 318—162 6 Claims



1. A driving circuit for controlling a synchronous motor, comprising:
an a.c. power source;
a capacitor and diode connected in series with the motor winding of said synchronous motor to said power source;
a thyristor connected in parallel with said capacitor and motor winding; and
means for controlling said thyristor to drive said synchronous motor only during the half cycles of said a.c. source during which said diode is blocked.

3,858,100

D.C. MOTOR SPEED CONTROL SYSTEM THROUGH PHASE CONTROL AND PHASE LOCKING CIRCUIT

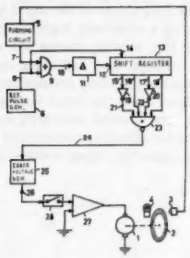
Giorgio Bussi, Milano, and Aldo Schiaparelli, Rho, both of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed May 1, 1973, Ser. No. 356,240
Claims priority, application Italy, May 4, 1972, 23885/72
Int. Cl. H02p 5/16
U.S. Cl. 318—314 7 Claims

1. A system for controlling the speed of a d.c. motor through a phase control and phase locking circuit comprising:
timing means to supply a sequence of timing pulses with a frequency representing the desired speed of the motor;
means responsive to the motor speed for supplying a sequence of tachometric pulses, with a frequency representing the real speed of the motor;

a binary unidirectional shift register with at least four storage cells to receive and store said timing pulses and said tachometric pulses in the order in which they are received;

said timing pulses being stored as binary information of a first logic value;



said tachometric pulses being stored as binary information of a second logic value;

decoding means to decode the content of said shift register means and to supply a binary signal whose logic value is dependent on the contents of said shift register means; and

means to convert said binary signal to a control voltage and to supply said motor with said control voltage.

3,858,101

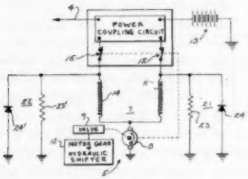
SHIFT MOTOR ACTUATOR CIRCUIT

Robert C. Schmiedel, Oshkosh, and Richard E. Staerzl, Fond du Lac, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed July 6, 1973, Ser. No. 377,027

Int. Cl. H02p *1/00*

U.S. Cl. 318—448 **15 Claims**



1. A marine propulsion apparatus having a shift mechanism movable between plurality of drive positions by an electrically driven actuator having limit switches actuated at each of the said positions to terminate operation of the actuator, said actuator comprising an electrical drive means having a power input means connected in circuit with said limit switches, said actuator having means tending to produce oscillation about each driven position and thereby produce an oscillatory switch operation in response to establishing of said drive positions, said oscillatory switch operation functioning to significantly reduce the life of the actuator, and an electrical dampening circuit means connected in parallel with said electrical drive means and selected to prevent said oscillatory switch operation.

3,858,102

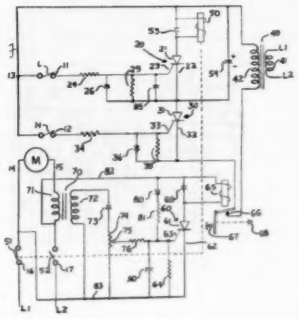
LIGHT LOAD CONTROL FOR WELL PUMP

James L. Quinn, 6143 W. Touhy Ave., Chicago, Ill. 60648

Division of Ser. No. 359,102, May 10, 1973, Pat. No. 3,801,889. This application Jan. 7, 1974, Ser. No. 431,209

Int. Cl. G05b *13/00*

U.S. Cl. 318—474 **3 Claims**



1. In a control for the circuit for a motor driving a well pump having an associated tank and intended for operation from the regular a.-c. supply line, a low-current lockout comprising, a current transformer having its primary winding wired in series with the pump motor and having a secondary winding, an latching type relay having an input coil and having a normally closed output contact, connecting means between the output contact and the motor so that the output contact controls the flow of current to the motor, a current detector circuit having an SCR including a gate and load circuit, the load circuit being coupled to the input of the latching type relay, the current detector circuit having power input terminals connected in shunt with the motor, the current detector circuit further having a source of positive voltage supplied by the power input terminals and capable of turning the SCR on and having a source of negative voltage supplied by the secondary winding of the current transformer, means for coupling the gate of the SCR to both sources, the source of negative voltage varying in accordance with the motor current and of such magnitude as to keep the SCR turned off as long as rated current is drawn by the motor but which permits the SCR to be turned on when less than rated current is drawn by the motor with resultant actuation of the latching type relay and interruption of the motor circuit for disablement of the motor under conditions when the pump is sucking air.

3,858,103

BATTERY CHARGING SYSTEMS

William Frank Hill, Stafford, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Sept. 5, 1973, Ser. No. 394,480

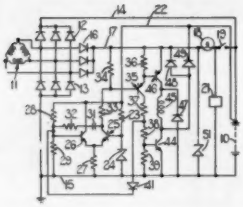
Claims priority, application Great Britain, May 9, 1972, 41065/72

Int. Cl. H02j *7/16*

U.S. Cl. 320—64 **1 Claim**

1. A battery charging system comprising in combination a wound field alternator providing power by way of a full wave

rectifier to positive and negative supply lines between which the battery is connected, one or more additional diodes coupling the alternator output to a third supply line which when the alternator produces an output is at substantially the same potential at the first line, a warning lamp and ignition switch connected in series between the third and first lines, a pair of switching devices coupling opposite ends of the field winding of the alternator to the third and second lines, said switching devices forming part of a voltage regulator for connecting and



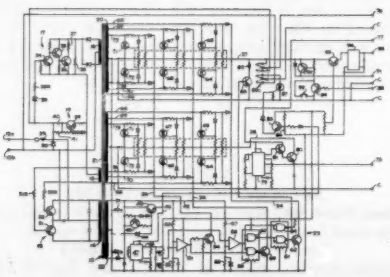
disconnecting the field winding from the third and first supply lines in accordance with the output voltage of the alternator to regulate the output voltage of the alternator, a first diode having its cathode connected to the junction of the field winding of the first switching device and its anode connected to the second line, and second and third diodes having their anodes connected to the junction of the field winding and the second switching device, the cathode of the second diode being connected to the third line and the cathode of the third diode being connected to the first line.

3,858,104

DC POWER CONVERTER

Russel Walter Grob, Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 7, 1973, Ser. No. 357,870
Int. Cl. H02p *13/24*
U.S. Cl. 321—2 **7 Claims**



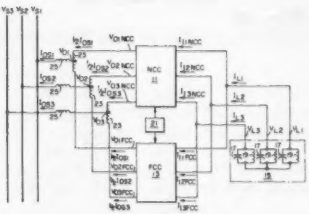
1. A direct current power converter for providing a substantially constant DC voltage output irrespective of the DC input voltage thereto, said power supply comprising a transformer having at least a primary winding, a secondary winding and an auxiliary winding, inverter means connected to said primary winding for generating an alternating current therein that has a magnitude proportional to the input voltage so as to induce in said secondary winding a voltage proportional to the input voltage, said inverter means including an oscillator powered by said DC input voltage and connected to said auxiliary winding to provide bias current thereto so that said inverter means induces in said primary winding an alternating current proportional to the magnitude of the input voltage, said secondary winding having a relatively high voltage tap and a relatively low voltage tap, sensing means for sensing the magnitude of the input voltage, first switching means responsive to said sending means for effecting connection of said high voltage tap to the output when the input voltage is below a preselected magnitude, and second switching means responsive to said sensing means for effecting connection of said low voltage tap to the output when the input voltage is above the preselected magnitude.

3,858,105

STATIC POWER CONVERSION ARRANGEMENT AND METHOD

Laszlo Gyugyi, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 18, 1973, Ser. No. 380,328
Int. Cl. H02m *5/04*; **G05f** *5/00*
U.S. Cl. 321—27 R **22 Claims**

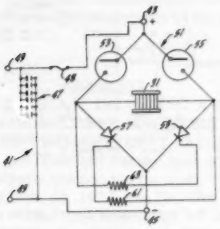


1. A static power conversion arrangement comprising:
a reactive power source of oscillating signals;
first and second converter circuits having the inputs thereof connected to said reactive power source, said second converter circuit being set to draw a reactive input current having a phase angle opposite to that of the reactive input current drawn by said first converter circuit; and
control means to cause said first and second converter circuits to produce output currents representative of identical power capabilities.

3,858,106
CONTROL CIRCUIT UTILIZING TEMPERATURE ACTUATED SWITCHES AND SILICON CONTROLLED RECTIFIERS FOR REVERSING THE POLARITY OF DIRECT CURRENT APPLIED TO A LOAD

Clifford G. Launius, 1783 Stockton Ave., Des Plaines, Ill. 60018

Filed Oct. 25, 1973, Ser. No. 409,373
Int. Cl. F25b *21/02*
U.S. Cl. 321—45 R 9 Claims



1. A control circuit for maintaining the temperature of a substance, such as medicine, between specific limits by reversing the polarity of direct electrical current applied to a thermoelectric element, said circuit including:

positive and negative input terminals,

a bridge connecting said input terminals,

a thermoelectric element connected across the bridge output terminals,

a temperature actuated switch located in each leg of the bridge connected to the positive input terminal,

said temperature actuated switches being normally open and one of said switches operating at a higher temperature range than the other of said switches with said temperature actuated switch operating in the higher range closing at an upper temperature limit and opening at a slightly lower temperature limit and said temperature actuated switch operating in the lower temperature range closing at a lower temperature limit and opening at a slightly higher temperature limit,

a semiconductor device located in each leg of the bridge connected to the negative input terminal, and

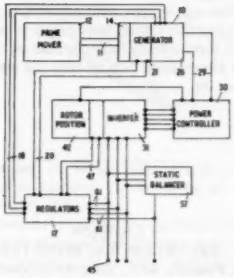
means to gate the semiconductor device in the opposite leg of the bridge when either temperature actuated switch is closed.

3,858,107
ELECTRICAL GENERATING APPARATUS

Christopher John Yarrow, Allerton, and Ronald Johnson, Beeston, both of England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed Jan. 8, 1974, Ser. No. 431,738
Claims priority, application Great Britian, Jan. 9, 1973, 11/73, Mar. 13, 1973, 12040/73
Int. Cl. H02p *9/42*; H02m *1/00*, *5/32*
U.S. Cl. 322—26 9 Claims

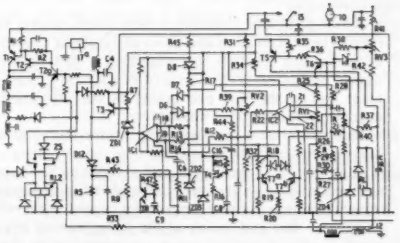
1. Electrical generating apparatus comprising a source of d.c. supply and an inverter, said inverter comprising an armature winding, a freely rotatable field winding associated with said armature winding, a plurality of connections spaced around said armature winding, and switch means for intermittently connecting said d.c. source to said connections in synchronism with the rotation of the field winding in a manner in which an a.c. output will be produced in use at at least one terminal of said armature winding, the frequency of the a.c. output being related to the speed of operation of said switch means and the rotating field winding.



3,858,108
GENERATOR CONTROL CIRCUITS

Arnold Bray, Hertfordshire, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed May 25, 1973, Ser. No. 363,830
Claims priority, application Great Britain, Mav 25, 1972, 24666/72
Int. Cl. H02p *9/30*
U.S. Cl. 322—28 6 Claims



1. A generator control circuit for use with an electrical generator of the kind having a field winding the circuit com-

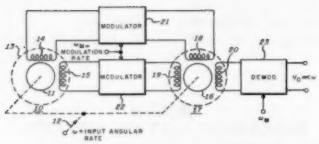
prising means for varying the field current in said generator, a differential amplifier for providing a control signal to said means, said differential amplifier having a pair of inputs, a network connected across the output of the generator for supplying a reference voltage to one of said inputs, means for applying a signal voltage which is a proportion of the actual output voltage of said generator to said other input, a sawtooth generator for providing a sawtooth voltage which is also applied to said other input whereby the output of the amplifier will be a pulse width modulated wave train which acts as a control signal for said means, said network including a Zener diode and a capacitive circuit connected in parallel with the Zener diode to substantially limit the rate of build up of voltage across the Zener diode and thereby the reference voltage.

3,858,109

BRUSHLESS TACHOMETER

Sam P. Liden, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,397
Int. Cl. H02p *9/00*
U.S. Cl. 322—31 **5 Claims**



1. A brushless tachometer for providing a signal proportional to the rate of rotation of a machine element, the combination comprising

a brushless generator including a permanent magnet rotor rotated by said element and a two-phase stator responsive to said stator rotation for producing a pair of output signals proportional to the speed of rotation of said element and to the sine and cosine of the instantaneous angular position of said element,

a brushless resolver means including a rotor also rotated by said element, and stator means,

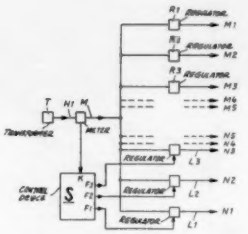
said stator means comprising a pair of input means responsive respectively to the output signals of said generator stator, and output means responsive to said input means and to the sine and cosine of the instantaneous angular position of said resolver rotor corresponding to the instantaneous angular position of said generator rotor, for cancelling the sine and cosine components of said generator signals, whereby the output signal of said resolver output means is proportional to the speed of rotation of said machine element.

3,858,110

METHOD AND MEANS FOR CONTINUOUS DISTRIBUTION OF ELECTRICAL ENERGY

Max Breitmeier, Oetwilerstrasse, Huttikon, Switzerland

Filed May 1, 1973, Ser. No. 356,212
Claims priority, application Switzerland, May 5, 1972, 6721/72
Int. Cl. G05f *1/12*; **H02j** *3/14*
U.S. Cl. 323—20 **10 Claims**



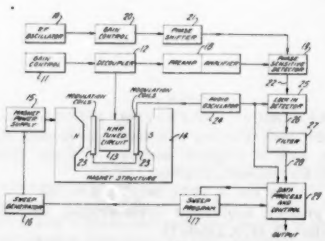
1. A method for continuous distribution of electrical energy, which comprises distributing the electrical energy over a plurality of secondary lines each of which is divided into two branches, sensing the output voltage of each of said secondary lines and preventing the voltage in each secondary line from dropping below a defined minimum value; the steps of sensing and preventing including limiting the output power of a first of each of the two branch lines in each secondary line to less than a predetermined value, and sensing the output voltage of the second of the two branch lines in each of said secondary lines and preventing the total output of each of said secondary lines from dropping below the defined minimum value of each of the secondary lines.

3,858,111

METHOD AND APPARATUS FOR SENSING CHEMICAL PROCESS CONCENTRATIONS

James H. Simpson, Jr., Katonah, N.Y., assignor to The Singer Company, New York, N.Y.

Continuation of Ser. No. 85,957, Nov. 2, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,275
Int. Cl. G01n *27/78*
U.S. Cl. 324—.5 R **2 Claims**



1. The method of sensing the concentration of aluminum ions in Bayer process liquors comprising the steps of

subjecting a sample of the liquors and two reference samples containing known concentrations of aluminum ions but having NMR resonance points lying on opposite sides of the resonance point for the liquor sample to the same NMR magnetic sweep field and the same radio frequency field;

applying a step function to the NMR magnetic sweep field to sense the ratio of aluminum concentration to sodium concentration in said liquor sample;

sensing the components of the resulting NMR output signal which represents the aluminum concentrations in the three samples;

comparing said signal components to derive an output signal representing the absolute concentration of aluminum in said liquor sample; and

comparing the said NMR output signal components representing the aluminum concentrations in said reference samples to determine the accuracy of the performance of the method.

3,858,112

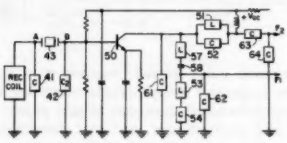
RECEIVER CIRCUIT INCLUDING A CRYSTAL RESONATOR FOR NUCLEAR MAGNETIC RESONANCE SIGNALS OF TWO DIFFERENT FREQUENCIES

Yoshiaki Satoh, and Hidefumi Funaki, both of Tokyo, Japan, assignors to Nippon Electric Varian, Ltd., Tokyo, Japan

Filed Sept. 20, 1973, Ser. No. 399,169

Int. Cl. G01n *27/78*

U.S. Cl. 324—.5 R **5 Claims**



1. A receiver circuit in a nuclear magnetic resonance analyzer for simultaneously receiving nuclear magnetic resonance signals of a first and a second discrete frequency comprising resonance circuit means to produce resonance circuit output signals in response to said nuclear magnetic resonance signals and amplifier means connected to said resonance circuit means to amplify said resonance circuit output signals to produce receiver output signals corresponding to said nuclear magnetic resonance signals;

said resonance circuit means including a receiving coil for detecting said nuclear magnetic resonance signals and a crystal resonator, said crystal resonator being connected in series between said receiving coil and said amplifying means, said crystal resonator having impedance characteristics such that said resonator performs substantially as an inductive element at said first frequency and substantially as a capacitive element at said second frequency.

3,858,113

IGNITION TIMING LIGHT SENSITIVITY ADJUSTMENT APPARATUS

Gerald A. Pruss, Chicago, Ill., assignor to Sun Electric Corporation, Chicago, Ill.

Filed Dec. 13, 1973, Ser. No. 424,550

Int. Cl. F02p *17/00*

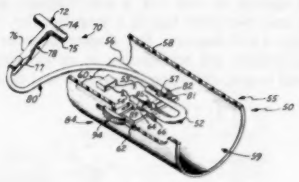
U.S. Cl. 324—17 **6 Claims**

1. In a system comprising a flash tube for generating a flash of light in response to the firing of a spark discharge device resulting in a surge of current in the ignition system of an internal combustion engine, improved apparatus for adjusting the trigger level voltage at which the flash tube fires comprising in combination:

bias means for supplying to the flash tube a DC bias voltage less than the trigger level voltage;

a metal band positioned around the flash tube;

a metal disk movably positioned adjacent the flash tube;



conductor means for transmitting a voltage surge to the metal band in response to the surge of current in the ignition system; and

adjustment means for varying the position of the metal band and metal disk relative to each other, whereby the magnitude of the voltage surge coupled to the flash tube can be varied.

3,858,114

METHOD AND APPARATUS FOR THE TESTING OF PROTECTIVE LININGS

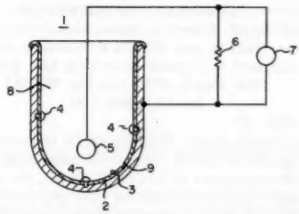
Siegfried Voellmin, Ormalingen, Switzerland, and Klaus Muller, Rheinfelden, Germany, assignors to F. Hoffmann-LaRoche & Co., Basel, Switzerland

Filed Nov. 12, 1973, Ser. No. 415,069

Claims priority, application Switzerland, Nov. 15, 1972, 16604/72

Int. Cl. G01r *31/12;* **G01n** *27/20*

U.S. Cl. 324—54 **8 Claims**



1. A method for the detection of damage to a non-conductive protective layer on the steel wall of a reaction vessel said protective layer being interspersed with one or more tantalum repair plugs, which comprises measuring a current flowing between a platinum electrode in an electrically conductive corrosive medium in the reaction vessel and the exposed steel surface at a damaged point of the protective layer, whereby the platinum electrode and the exposed steel surface form a Pt-Fe cell.

3,858,115

INDUCTION VOLTS-SQUARED HOUR METER

Auburn K. Griffin, Jr., Sanford, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

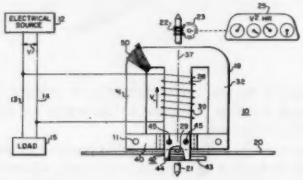
Filed Aug. 30, 1973, Ser. No. 392,911

Int. Cl. G01r *11/02;* **310** *172*

U.S. Cl. 324—137 **4 Claims**

1. An induction volts-squared hour meter comprising: a rotatable conductive disc; an E-shaped laminated magnetic core with a center leg defining a main pole and two outer legs defining flux return poles, said center terminating at a pole

face end and said outer legs terminating at free ends adjacent an outer part of said conductive disc and being aligned with each other at a substantially right angle to a radius of said disc; a coil on said center leg, said coil developing a working magnetic flux directed from said pole face end of said center leg through said conductive disc in response to a voltage to be measured applied to said coil; a soft magnetic bracket attached to said two outer legs in a magnetic flux conducting relationship; a soft magnetic flux shaping member extending from said bracket and terminating in an elongated shaped tongue, said tongue extending below both said center leg and



said conductive disc with the elongated sides thereof extending at substantially right angles to said radius of the disc for a distance further from the center of the center leg in one direction than in an opposite direction so as to overlap substantially more of the free end of one than of the other of said outer legs and form a predetermined asymmetrical distribution of the working flux field relative to the center leg when being directed through said disc to said tongue; and a dial register rotatably coupled to said disc to indicate a total of disc revolutions representing a corresponding value of volts-square hours measured for the voltage applied to said coil.

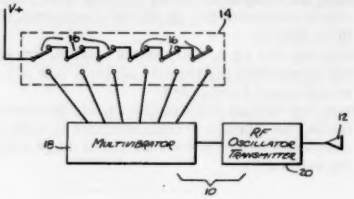
3,858,116

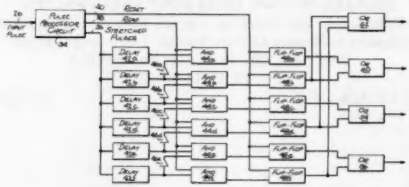
PULSE-WIDTH MODULATION CONTROL SYSTEM AND DISCRIMINATOR THEREFOR

Wendel M. Friedl; Robert A. Miles, both of Cleveland; John W. Allen, Hudson, and William P. Waiwood, Parma, all of Ohio, assignors to Johnson Diversified, Inc., Racine, Wis.

Filed May 9, 1973, Ser. No. 358,561
Int. Cl. H04b 7/00
U.S. Cl. 325—37 **6 Claims**

1. In a control system including an RF transmitter of input control signals and an RF receiver for generating output control signals in response to said input signals, the combination comprising a switching circuit for selecting any one of a plurality of three or more control functions, a multivibrator coupled to said switching circuit for producing pulsed output signals having different predetermined durations dependent upon selections made by said switching circuit, an RF oscillator-transmitter connected to said multivibrator for producing bursts of RF energy having durations corresponding to the output signals from said multivibrator, an RF receiver for receiving and demodulating said bursts of RF energy and for producing pulse signals having durations corresponding to said pulsed output signals generated by said multivibrator, discriminator means having a plurality of output terminals corresponding in number to the number of said switching circuit selections, wherein said discriminator means is for providing output control signals at said respective terminals in correspondence with the selected control functions, and function control means coupled to said discriminator means output terminals for actuation thereby in response to said selections made by said switching circuit, said discriminator means comprising pulse processor circuit means having an input coupled to receive said pulse signals from said receiver and having a first output for producing a stretched output signal in response to each input signal, wherein each said stretched output signal has a duration which is coextensive with, and a predetermined increment longer than, its corresponding input pulse signal, and having a second output for producing READ pulses which are coextensive with only said predetermined increments of said stretched pulses; said discriminator means further comprising a plurality of delay circuit means corresponding in number to said plurality of control functions selectable by said switching circuit, each said delay circuit means having an input coupled to said first output for producing a delay signal in response to said stretched signals and after





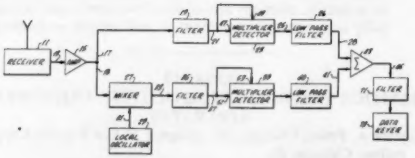
a predetermined delay period, wherein said delay circuit means have respective delay periods which are coextensive with said predetermined durations of said pulsed output signals from said multivibrator; and said discriminator means further comprising a plurality of AND circuits corresponding in number to said delay circuit means, and means coupling said AND circuits to said delay circuit means and to said second output of said pulse processor circuit means, wherein said AND circuits provide output control signals corresponding, respectively, to said selected control functions.

3,858,117

RADIO TELETYPE DETECTOR CIRCUIT

Robert B. Denny, Poway, Calif., assignor to Adar, Inc., Santa Ana, Calif.

Filed Jan. 29, 1973, Ser. No. 327,327
Int. Cl. H03d 9/04; H04l 27/14
U.S. Cl. 325—320 **17 Claims**



8. A discriminator for differentiating between first and second frequencies alternately present in an input signal, comprising:

a pair of band pass filters producing filtered output signals each tuned to said first frequency, one of said filters being connected to said input signal;

means for heterodyning said input signal, said heterodyning means being connected to the other of said filters; and

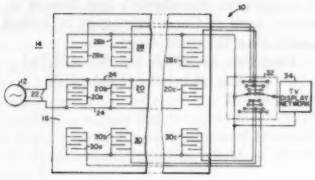
means connected to respond to the output of each of said filters for indicating which of said filtered output signals has a higher amplitude.

3,858,118

ACOUSTIC SURFACE WAVE TELEVISION TUNER

Michael R. Daniel, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 17, 1973, Ser. No. 380,183
Int Cl. H04b *1/18;* **H03h** *7/04, 9/20*
U.S. Cl. 325—465 **7 Claims**



1. A tuner for selectively receiving television signals comprising:

a. a piezoelectric substrate on which acoustic surface waves may be propagated;

b. a centralized input transducer network disposed on a selected surface of the substrate, which network is comprised of a plurality of input transducers which are respectively designed to launch acoustic surface waves as a function of a selected bandwidth of an input signal applied to the network, which acoustic surface waves are propagated across the surface of said substrate;

c. a row of output transducers disposed on the selected substrate surface on either side of the centralized input transducer network, with paired sets of output transducers which are designed to receive acoustic surface waves representative of a selected bandwidth disposed one in each row adjacent the input transducer which launches said selected bandwidth acoustic surface waves, each paired set of output transducers tuned respectively to adjacent television channel signals encompassed within the selected bandwidth for converting said acoustic surface wave to the respective electromagnetic channel signal;

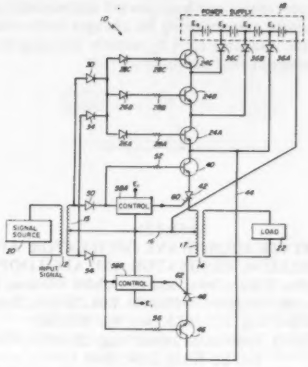
d. switching means connected to each of said output transducers for selectively applying the desired electromagnetic channel signal to the television display generating network.

3,858,119

FOLDED PUSH-PULL AMPLIFIER

Bjorn H. Engelhardt, North Kingstown, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed June 18, 1973, Ser. No. 370,894
Int. Cl. H03f *3/26*
U.S. Cl. 330—15 **7 Claims**



1. A circuit comprising:

a transformer having a plurality of terminals;

means coupled to a source of input signal for amplifying said signal; and

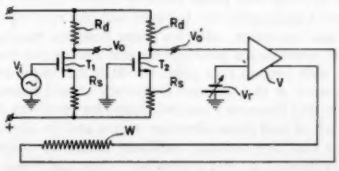
switching means coupled between said amplifying means and each of said terminals of said transformer, said switching means sequentially connecting said amplifying means to successive ones of said transformer terminals for coupling said amplified signal during successive portions of said input signal to successive ones of said terminals of said transformer, said transformer serving to couple said power to a load.

3,858,120

INTEGRATED SEMICONDUCTOR DEVICE OR ELEMENT

Jean Hubertus Josef Lorteije, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. Nos. 147,312, April 22, 1971, abandoned, and Ser. No. 834,956, June 20, 1969, abandoned. This application Dec. 1, 1972, Ser. No. 311,419
Claims priority, application Netherlands, June 29, 1968, 6809256
Int. Cl. H03f *1/32*
U.S. Cl. 330—23 **6 Claims**



1. An integrated circuit, comprising: an insulated-gate field-effect transistor; a biasing circuit tending to bias said transistor

at a nominal operating point, the operating point tending to vary however even in a thermally static environment with static bias conditions due to changes in the electrical behavior of the insulating layer in said transistor; a heating element for maintaining said transistor in an elevated thermal environment; means for providing a measure of the amount by which the operating point of said transister deviates from said nominal operating point; and means controlling said heating element in accordance with said measure for changing the thermal environment of said transistor in the direction which tends to bring the operating point back toward said nominal operating point, thereby compensating for changes in the electrical behavior of the insulating layer by suitably changing the thermal environment of said transistor.

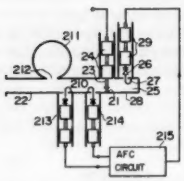
5. A stabilized solid-state oscillator comprising: a free running oscillator means including at least a solid-state oscillator element, a microwave transmission line on which said solid-state oscillator element is mounted, and means for supplying a bias voltage to said oscillator element; a resonator connected to said microwave transmission line for controlling the oscillation frequency of said free running oscillator by phase locking; a directional coupler connected to said microwave transmission line between said solid-state oscillator element and said resonator; means for detecting the phase of wave reflected from said resonator on the basis of incident wave entering said resonator, said reflected wave and incident wave being both obtained through said directional coupler; and frequency control means for receiving an output of said phase detector means and for applying its output to said free running oscillator means to control the frequency thereof to a predetermined value.

3,858,121

SOLID STATE MICROWAVE OSCILLATOR WITH STABILIZING RESONATOR AND AFC LOOP

Yoichi Kaneko, Tokorozawa, and Katsuhiro Kimura, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 17, 1973, Ser. No. 389,269
Claims priority, application Japan, Aug. 25, 1972, 47-84540
Int. Cl. H03b *3/04, 7/14*
U.S. Cl. 331—9 **8 Claims**



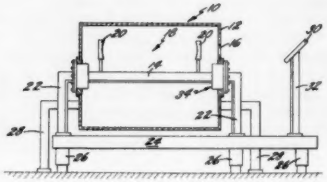
1. A stabilized solid-state oscillator comprising: a free running oscillator means including at least a solid-state oscillator element, a microwave transmission line on which said solid-state oscillator element is mounted, and means for supplying a bias voltage to said solid-state oscillator element; a resonator connected to said microwave transmission line for controlling the oscillation frequency of said free running oscillator means by phase locking; two phase detector means coupled to said microwave transmission line between said free running oscillator and said resonator, said two phase detector means being located at symmetrical positions on said microwave transmission line with respect to a point at which the amplitude of a standing wave at the resonant frequency of said resonator is minimum; and frequency control means for receiving an output of each of said phase detector means and for applying its output to said free running oscillator means to control the frequency thereof to a predetermined value; said phase detector means detecting phase variations of said standing wave due to variations in the oscillation frequency of said free running oscillator in the form of amplitude variations of said standing wave.

3,858,122

VIBRATION ISOLATION IN A GAS LASER

Albert W. Angelbeck, Manchester, and Donald J. Longtin, Glastonbury, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 26, 1973, Ser. No. 427,961
Int. Cl. H01s *3/02;* **F16f** *15/02*
U.S. Cl. 331—94.5 R **4 Claims**



1. A gas laser system in which the optics of the system are insulated from the vibrations present in the environment and the auxiliary equipment, the system comprising:

A gas enclosure;

structural means fixedly attached to the gas enclosure to rigidly support the enclosure on a reference ground;

a first optical bench internal of the enclosure to support internal optical means used in the production of laser radiation;

a second optical bench external of the enclosure to provide support to the first bench;

a vibration isolation support to flexibly hold the second optical bench from the reference ground and insulate the second bench from vibrations which are otherwise transmitted from ground to the bench by absorption of the vibrations; and

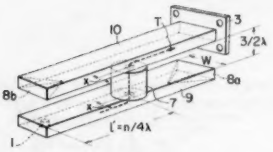
an enclosure interlock which rigidly joins the first bench to the second bench and is flexibly attached to the enclosure, the interlock having a flexible member which joins the enclosure to the optical benches, for forming a feedthrough in the enclosure which is gas tight for a pressure differential greater than one atmosphere and for insulating the optical benches from vibrations in the enclosure.

3,858,123

NEGATIVE RESISTANCE OSCILLATOR

Tomozo Ohta, and Syoji Makino, both of Yokohama, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed June 22, 1973, Ser. No. 372,740
Claims priority, application Japan, June 24, 1972, 47-62851
Int. Cl. H03b 7/14
U.S. Cl. 331—107 R 3 Claims



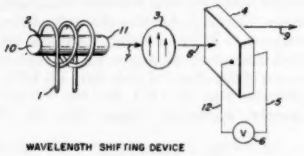
1. A negative resistance oscillator for producing an oscillating signal and comprising a negative resistance means for generating oscillations at a frequency f_o, a first line connected at one end thereof with a load, a second line connected at one end thereof with a non-reflecting terminal, and at the other end thereof with said negative resistance means, directional resonator means disposed between said first and second lines and having a resonating frequency f_o for directionally coupling energy at said resonating frequency f_o generated by said negative resistance means to said load, the distance between said negative resistance means and the electric coupling point of said directional resonator means with said second line being equal to an integer multiple of one-fourth of the wavelength of the signal.

3,858,124

ORGAN MONOCRYSTALLINE LIGHT WAVELENGTH CHANGING ELEMENT

Michael Bass, Lexington, and Dominic P. Bua, Saugus, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 1,164, Jan. 7, 1970, abandoned. This application June 12, 1972, Ser. No. 261,852
Int. Cl. H01s 3/10
U.S. Cl. 332—7.51 10 Claims



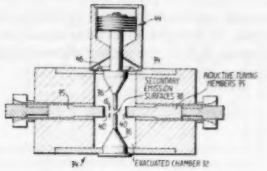
1. In combination:
optically permeable crystal means formed from at least one of the group of materials consisting of coumarin; 7-diethylamino - 4-methylcoumarin; 7-hydroxycoumarin; and quinine sulfate; and
means for shifting the wavelength of coherent light comprising introducing said coherent light having a wavelength within the infra-red region into the crystal means.

3,858,125

RECEIVER PROTECTION METHOD AND APPARATUS

Theodore M. Nelson, Catonsville, and Harry Goldie, Randallstown, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1972, Ser. No. 276,346
Int. Cl. H01p 1/14; H01j 7/70, 43/02
U.S. Cl. 333—13 3 Claims



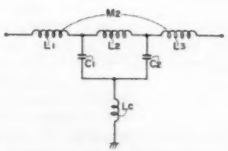
1. Apparatus for protecting a wave energy receiver from damage by high energy level pulses comprising:
a. a wave guide element adapted to be positioned in a transmission path along which wave energy is directed to the wave energy receiver, said element including an evacuated chamber through which the wave energy is directed to the receiver;
b. a pair of frustoconical shaped electrodes positioned in said chamber, at least one of said electrodes including an annular tritium doped shoulder and an electron multiplying surface spaced from said shoulder, said electrodes being positioned on opposite sides of said chamber.

3,858,126

MUTUAL INDUCTANCE ADJUSTING CIRCUIT

Kasuo Kameya, Saitama-ken, Japan, assignor to Toko, Inc., Tokyo, Japan

Filed June 13, 1973, Ser. No. 369,483
Claims priority, application Japan, June 16, 1972, 47-59404
Int. Cl. H03h 7/18, 7/32
U.S. Cl. 333—29 5 Claims



1. A mutual inductance adjusting circuit for a network including at least one inductor-capacitor combination unit comprising:

A. at least first, second, and third inductors connected in series with each other;

B. at least first and second capacitors, said first capacitor being connected at one end to the connection point between said adjacent first and second inductors and said second capacitor being connected at one end to the connection point between said adjacent second and third inductors, and

C. a compensating inductance element through which said capacitors are connected at the other ends thereof to a reference potential point, whereby the effective value of the mutual inductance at least between said first and third inductors is changed by a value equal in magnitude but opposite in sign to the inductance of said compensating inductance element.

3,858,127

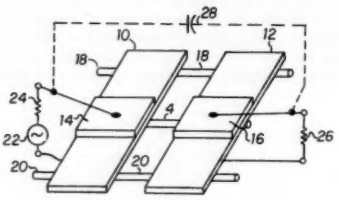
STABLE AND COMPACT LOW FREQUENCY FILTER

Robert A. Johnson, Tustin, Calif., assignor to Rockwell International Corporation, Dallas, Tex.

Filed Dec. 10, 1973, Ser. No. 423,349

Int. Cl. H03h *9/02, 9/26*

U.S. Cl. 333—72 **2 Claims**



1. A low frequency mechanical filter comprising a plurality of cascaded two-resonator sections; each section including first and second flexure mode resonator bars, a piezoelectric transducer mounted on each bar, a bridging capacitor whereby attenuation poles above and below the filter passband are realized, and coupling wires attached to and acoustically coupling said first and second bars; and coupling means coupling said sections in cascade.

3,858,128

1 DB STEP ATTENUATOR

Clayton D. Mullin, St. Paul, Minn., assignor to Textron, Inc., Providence, R.I.

Filed Feb. 4, 1974, Ser. No. 439,623

Int. Cl. Ho3h *7/26*

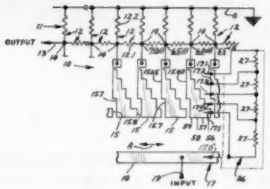
U.S. Cl. 333—81 R **6 Claims**

1. An attenuator for audiometers and the like having an input and output, comprising:

a large increment attenuator ladder having ladder segments and connection points between such segments to produce large increment dB attenuation change at adjacent connection points;

a minute increment attenuator including a plurality of series-connected resistances and having rigidly interconnected wiper contacts connected at the ends of the several resistances;

said output and input being applied to the terminal end of the attenuator ladder and a terminal end of the series-connected resistances; and



a switching plate having a plurality of adjacent conductive switching areas over which such wiper contacts pass in succession, each of said conductive areas being connected to a respective connection point of the attenuator ladder,

said conductive areas and wiper contacts being shaped and arranged relative to each other whereby as the contacts move over such an area, the contacts sequentially engage the conductive area to sequentially change the number of such resistances in series with a particular connection point of the attenuator ladder, and to repeat the sequence of engagement as the contacts move to an adjacent conductive area.

3,858,129

TUNING ARRANGEMENT HAVING COAXIALLY MOUNTED SHAFTS AND REMOVABLE KNOBS

Takashi Ashida, Akashi, and Nobuo Yamada, Kobe, both of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu Ten Limited, Kobe, both of, Japan, part interest to each

Continuation of Ser. No. 211,498, Dec. 23, 1971. This application May 25, 1973, Ser. No. 364,052

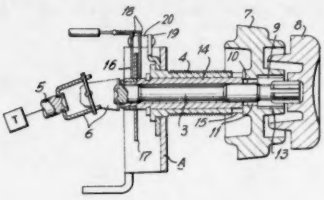
Claims priority, application Japan, Dec. 28, 1970, 45-127989

Int. Cl. H03j *3/20*

U.S. Cl. 334—78 **4 Claims**

1. Electrical apparatus having an input circuit having a variable condenser and a tuning means, for tuning a tuned electrical circuit, said electrical apparatus comprising, tuning shaft rotatably mounted and having a front end and having a rear end affixed to the tuning means, the tuning shaft passing freely through the condenser; and an adjusting shaft rotatably mounted coaxially with and around the tuning shaft and having a front end and having a rear affixed to the condenser, the tuning shaft and the adjusting shaft being rotatable independently of each other, the tuning means being adjustable by the tuning shaft and the condenser being rotatable with the adjust-

ing shaft, and a knob removably mounted adjacent the front end of said tuning shaft for rotating said tuning shaft, said



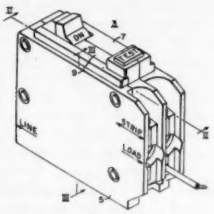
adjusting shaft being hidden by said knob in the condition of non-engagement with said knob during normal operation.

3,858,130

GROUND FAULT CIRCUIT BREAKER WITH COLD TEMPERATURE BIMETAL CONSTRICTION

John J. Misencik, Shelton, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 4, 1973, Ser. No. 421,573
Int. Cl. H01h *83/02*
U.S. Cl. 335—18 **5 Claims**



1. A circuit breaker comprising an electrically insulating housing and including a box-like container and a cover therefor, a circuit breaker structure within the housing and comprising a pair of separable contacts operable between open and closed positions, a releasable member in an initial position and movable when released to a tripped position to effect automatic opening of the contacts and comprising an elongated current-carrying bimetal for tripping the releasable member when a predetermined current overload effect deflection of said bimetal in one direction from a latched position, the bimetal being mounted at one end portion and disposed in an unbiased position, bimetal stop means for preventing said bimetal from moving in the other direction from said latched position when the bimetal is subjected to extremely cold ambien temperature, and the container and the cover being molded members one of which comprises an integral molded projection at the other end of the bimetal.

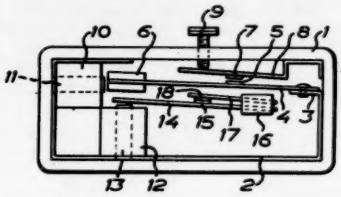
3,858,131

APPARATUSES FOR MAKING DEVICES, SUCH AS ALARM DEVICES, OPERATIVE

Arne Erik Alvar Larsson, Nydalavagen 9, 214 58 Malmo, Sweden

Filed July 9, 1973, Ser. No. 377,738
Claims priority, application Sweden, July 10, 1972, 9085/72
Int. Cl. H01h *50/64*
U.S. Cl. 335—136 **3 Claims**

1. An alarm activating apparatus which comprises a base means, a magnetic material weighted pendulum supported by said base means for oscillatory movement relative thereto in response to dynamic input forces applied to the base means, switch contact means including a switch contact carried by said pendulum, said switch contact means being disposed for connection to an alarm to activate same as the pendulum oscillates whereby said alarm is activated in response to said dynamic input forces, override means selectively operable to preclude activation of such alarm by said switch contact means, said override means including an electromagnet positioned in relation to the magnetic weighting material of said pendulum to magnetically counteract the oscillation thereof



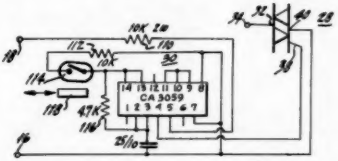
when the electromagnet is energized, electromagnetic driving means operable when energized to apply magnetic driving forces to said pendulum to impart oscillation thereto for activating the alarm independently of any activation thereof resulting from dynamic input forces applied to the base means, and switch means connected to said electromagnetic driving means and operable to selectively connect same with a source of electric energy for energization thereby.

3,858,132

ELECTRICAL SWITCH

Donald C. Long, Yardley, Pa.; Albert C. Hartsough, Willingboro, and Robert F. Sanford, Princeton, both of N.J., assignors to Princeton Electro Dynamics, Inc., Princeton, N.J.

Division of Ser. No. 216,527, Jan. 10, 1972,. This application Jan. 31, 1974, Ser. No. 438,229
Int. Cl. H01h *1/66*
U.S. Cl. 335—153 **3 Claims**



1. An electrical switch for use in a combustible atmosphere comprising:

a housing, and means sealing said housing against said combustible atmosphere, said housing containing an electronic switching circuit including:

first and second power terminals for connection to a utilization circuit; and

actuating means which make electrical connection between said terminals when said switching circuit is closed and which break said electrical connection when said switching circuit is open;

said actuating means including:

a. a source of magnetic flux;

b. a magnetic flux detector having an input terminal coupled to said first terminal and an output terminal coupled to said second terminal and being placed in one of a low and high impedance state between its input and output terminals in making and breaking said connections as a function of the magnitude of magnetic flux established thereon from said source; and

c. mechanical regulator means positioned with respect to said source of magnetic flux for mechanically control-

ling the amount of magnetic flux linking said detector from said source and the actuation of said switching circuit from a make to a break condition and vice versa;

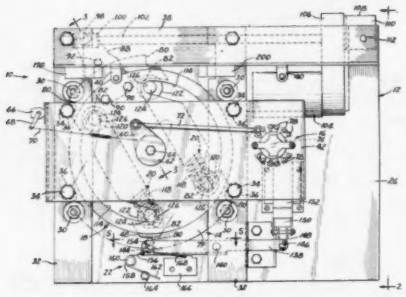
with at least said first and second terminals and said magnetic flux detector being subject to electrical arcing, but being included within said housing and therefore sealed from said combustible atmosphere, and with said source and said mechanical regulator means being non-electrically operable and therefore not subject to arcing being wholly external to said housing and within said atmosphere, to thereby control said switch from closed condition to open condition solely from within said combustible atmosphere but without giving rise to the creation of such electrical arcs as wouuld tend to ignite said atmosphere.

3,858,133

SWITCH TRANSFER MECHANISM

Howard E. Swanson, Chicago, and Richard S. Rudy, Chicago Heights, both of Ill., assignors to G & W Electric Specialty Company, Blue Island, Ill.

Filed Jan. 21, 1974, Ser. No. 435,230
Int. Cl. H01h *9/22*
U.S. Cl. 335—160 **12 Claims**



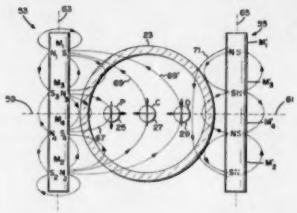
1. A switch transfer mechanism for selectively transferring an electric load between a preferred and an emergency feeder voltage, comprising, in combination, housing means, first actuating means supported by said housing means and movable between a first position connecting the load to the preferred feeder voltage and a second position connecting the load to the emergency feeder voltage, torque plate means supported by said housing means for movement between first and second positions, second actuating means connected to said torque plate means and operative to move said torque plate means between said first and second positions, energy storing means operatively interconnecting said first actuating means and said torque plate means, said energy storing means being adapted to be placed in a potential energy storing condition when said torque plate means is moved between its said first and said second positions with said first actuating means retained in generally fixed position, latch means operative between a first position retaining said first actuating means in a generally fixed position and a second position allowing movement of said first actuating means between its first and second positions, and control circuit means operative to prevent operation of said second actuating means unless said latch means is in its said first position retaining said first actuating means in a fixed position, release of said latch means from its said first position serving to effect a snap-action movement of said actuator means through release of the potential energy stored in said energy storing means.

3,858,134

HORIZONTAL CONVERGENCE MEANS FOR IN-LINE BEAM CATHODE RAY TUBE

Raymond A. Budd, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 3, 1974, Ser. No. 475,811
Int. Cl. H01f *7/00*
U.S. Cl. 335—212 **6 Claims**



1. A horizontal convergence device for use with a plural in-line beam color cathode ray tube having a cathodoluminescent screen with an apertured mask spatially related thereto and a multi-beam electron gun assembly oriented in a manner to direct beams to said screen, said device being formed for positioning on the exterior of the neck portion of said tube relative to the terminal electrodes of said electron gun assembly interiorly oriented therein and emitting an array of plural in-line beams in a substantially common plane, said device comprising: a pair of rotatably adjustable rod-like multi-pole magnetic members producing *x* and *y* components of magnetic flux, each of said multi-pole members having a plane of symmetry therein whereat the magnitude of the *x* component of the interacting fluxes is zero, said members being positioned one on either side of said tube neck portion in an orientation substantially perpendicular to the plane of said beams with the planes of symmetry of the respective magnetic members being substantially coexistent with the plane of said beams, each of said magnetic members being individually adjusted to impart a magnitude of interacting fluxes to influence substantially horizontal movement to each of the outer beams of said array in a direction counter to that of center beam movement to effect static convergence of said beams at the plane of said mask.

3,858,135

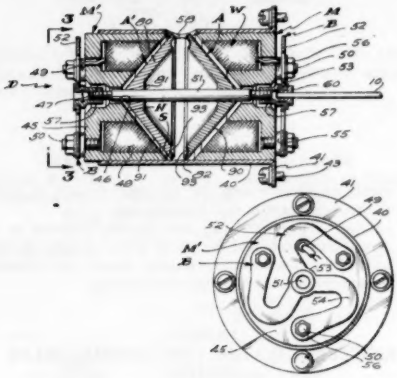
PUSH-PULL LINEAR MOTOR

Samuel A. Gray, P.O. Box 7127, Sun Valley, Calif. 91505

Continuation-in-part of Ser. No. 280,405, Aug. 14, 1973, Pat. No. 3,774,642. This application Nov. 5, 1973, Ser. No. 412,818
Int. Cl. H02p *5/28, 7/36*
U.S. Cl. 335—266 **5 Claims**

1. An improved drive means to shift an axially shiftable member forwardly and rearwardly to and from a central normal position comprising an elongate armature shaft with front and rear ends, coupling means connecting the front end of the shaft with the member, a pair of front and rear armatures on the shaft in spaced relationship and defining forwardly and rearwardly, axially and radially outwardly disposed conical surfaces, front and rear electro magnet field units arranged forwardly and rearwardly of the front and rear armatures and having axially and radially inwardly disposed conical north and south poles in normal predetermined spaced and opposing relationship with the conical surfaces of the armatures, resilient support means at the ends of the shaft maintaining the shaft on a common axis and biased to exert equal and opposing forces axially inwardly at the ends of the shaft and normally yieldingly holding the shaft with the armature in its normal position, said field units normally energized by quiescent currents and establishing equal and opposite magnetic

fields intersecting the armatures related thereto whereby the armatures are normally magnetized and held in their normal position by the fields, said armatures and shaft being shifted axially toward one field unit upon an increase of current thereto and a decrease of current to the other field unit resulting in increase and decrease in the magnetic fields of the units



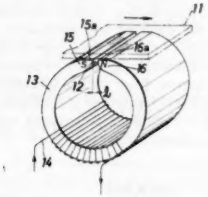
acting on their related armatures, the armatures having progressively magnetically saturable portions whereby the saturable portion of the armatures saturate progressively upon linear longitudinal movement toward their related field units and in response to linear differentials in the currents to the field units.

3,858,136

APPARATUS FOR MULTIPOLAR MAGNETIZATION

Sekiba Jun, Kyoto, Japan, assignor to Yamauchi Rubber Industry Co., Ltd., Osaka, Japan

Filed Dec. 5, 1973, Ser. No. 421,948
Claims priority, application Japan, Dec. 7, 1972, 47-123148
Int. Cl. H01f *13/00*
U.S. Cl. 335—284 **6 Claims**



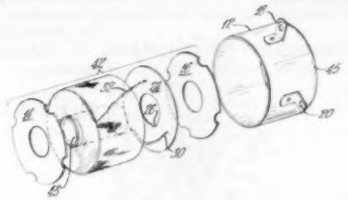
1. An apparatus for multipolar magnetization for use in the manufacture of flexible permanent magnets, comprising an annular, magnetically permeable body formed with a gap and having a width not smaller than the width of a sheet to be magnetized, a conductor wound around said body and connected to an alternating current source to thereby pass constant exciting current of constant frequency therethrough and a pair of magnetic poles opposing each other with said gap which measures from 1 to 2.5 mm in size interposed therebetween and each of said poles having a surface to be positioned face-to-face with said sheet as the sheet travels continuously thereover for magnetization.

3,858,137

SLEEVE ENCLOSED COIL

George H. Roggenkamp, Salem, and Walter C. Ellis, Jr., Roanoke County, both of Va., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 19, 1973, Ser. No. 417,169
Int. Cl. H01f *15/10, 27/04*
U.S. Cl. 336—90 **7 Claims**



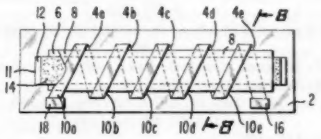
1. An enclosed electric coil assembly comprising:
an annular coil wound around a bobbin to form a conductive member having a first end and a second end;
a rigid tubular casing of electrically insulating material extending longitudinally around the outer periphery of said coil to provide a sturdy mounting surface;
electric terminal means mounted to the outside of said rigid tubular casing, means electrically connecting at least one end of the conductive member of said annular coil to said electric terminal means at the point of attachment of said electric terminal means to said tubular casing, said end extending from the inside of said tubular casing to said terminal means, said tubular casing taking up any strain placed on said terminal means to prevent said conductive member from being disconnected from said terminal means; and
end cover means insulating the ends of said annular coil.

3,858,138

TUNEABLE THIN FILM INDUCTOR

Jonathan Isaac Gittleman, Trenton, and Lawrence Matthew Zappulla, Hazlet, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 338,110, March 5, 1973, abandoned. This application May 10, 1974, Ser. No. 468,932
Int. Cl. H01f *21/06*
U.S. Cl. 336—136 **5 Claims**



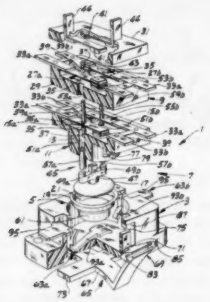
1. A tuneable film type inductor comprising a first series of metal film stripes adhered to an insulating substrate, a first synthetic resinous film of insulating material covering said stripes except the ends thereof, a second synthetic resinous film of insulating material over said first film and having a central portion spaced therefrom, both of said films being joined along their edges such that both films together form a sleeve, a second series of metal film stripes on top of said second film of insulating material, each member of said second series of strips being connected to members of said first series of stripes to form a continuous flat helix, and a moveable member of magnetic material disposed between said

insulating films, said moveable member comprising a thin strip of dielectric material with a coating of ferromagnetic material thereon.

3,858,139
TIME-DELAY RELAY AND METHOD OF ASSEMBLING SAME

Eugene A. Hunter, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 30, 1973, Ser. No. 383,937
Int. Cl. H01h *61/00*
U.S. Cl. 337—88 **17 Claims**



1. A time-delay relay comprising:

a housing having a chamber therein and openings in its sidewalls;

a thermally responsive switch assembly having contacts and a thermostatic element, said contacts being movable into and out of engagement with one another in response to actuation of the thermostatic element when the latter is subjected to predetermined temperature conditions thereby to make and break a first circuit;

a heater for heating said thermostatic element, said heater being energized by a second circuit, said switch assembly having at least a portion thereof adapted for reception and mounting within said chamber in an operating position in which said switch assembly is in heat-transfer relation with said heater; and

a retainer on the outside of said housing having portions thereof extending through said openings in the sides of the housing for gripping engagement with said switch assembly so as to hold the latter in its said operating position.

3,858,140
TIME-DELAY RELAY AND METHOD OF ASSEMBLING SAME

John T. Hancock, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 30, 1973, Ser. No. 383,946
Int. Cl. H01h *61/00*
U.S. Cl. 337—88 **11 Claims**

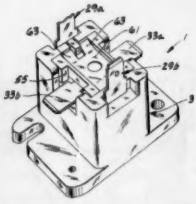
1. A time-delay relay comprising:

a housing having a chamber and terminal receiving slots therein;

a thermally responsive switch assembly mounted within said chamber and having contacts and a thermostatic element, said contacts being movable into and out of engagement with one another in response to actuation of the thermostatic element when the latter is subjected to predetermined temperature conditions thereby to make and break a first circuit;

a heater in heat-transfer relation with said switch assembly for heating said thermostatic element, said heater being energized by a second circuit;

a pair of terminals adapted for conductive electrical contact with said heater, said terminals constituting a portion of said second circuit, said heater and said switch assembly being mounted within said chamber and said terminals being received by said terminal receiving slots in said housing; a cover overlying said chamber and having



means engageable with said terminals thereby to retain the terminals within said housing; and

a retainer engageable with said housing adapted to be forced into position at the mouth of the chamber thereby to hold the cover, switch assembly, heater and terminals in assembled relation within said housing.

3,858,141
REDUCED ACTUATION TIME THERMAL RELAY SYSTEM

Robert P. Lackey, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 3, 1973, Ser. No. 420,997
Int. Cl. H01h *61/013*; **H05b** *1/02*
U.S. Cl. 337—140 **14 Claims**

1. A reduced actuation time thermal relay system for controlling energization of a load by a power supply, said system comprising:

a thermal relay having a resistive control element and a pair of mating contacts movable between closed circuit and open circuit positions in response to the temperature of said control element rising above a predetermined level and falling substantially therebelow; and

means for electrically energizing said resistive control element initially to apply a first voltage thereby to cause rapid heating of the element and thereafter to apply a second and reduced voltage to said element, said reduced voltage being of sufficient magnitude to prevent the temperature of said element from falling substantially below said predetermined level whereby the actuation time of said thermal relay is substantially reduced without damaging said resistive control element.

3,858,142
FUSE AND METHOD OF MAKING SAME

Gerardus Jacobus Deelman, Eindhoven, and Jacob Kramer, Utrecht, both of Netherlands, assignors to N. V. Olvis, Mol, Belgium

Filed June 20, 1973, Ser. No. 371,728
Claims priority, application Netherlands, June 22, 1972. 7208554
Int. Cl. H01h *85/14*
U.S. Cl. 337—152 **4 Claims**

1. A method of making a fuse wherein small discs are punched from a strip of thinly rolled activator material, the discs then being disposed on a fusible wire in spaced apart

relationship with the activator side facing the wire, the wire being previously provided with an adhesive coating, the wire with the discs being passed along a heating means so as to melt

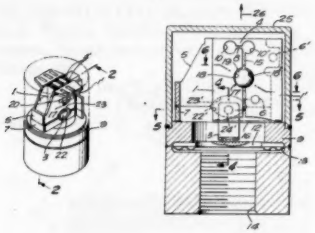
each disc to form an activator core on the fusible wire, whereafter a desired length of the fusible wire carrying the activator cores is mounted in an appropriate housing.

3,858,143

BALL STOP PRESSURE TRANSDUCER

Richard R. Schaberg, Ventura, Calif., assignor to Statham Instruments, Inc., Oxnard, Calif.

Filed Apr. 19, 1974, Ser. No. 462,241
Int. Cl. G01l 1/22
U.S. Cl. 338—4 **4 Claims**



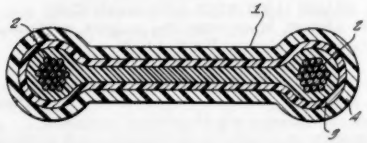
1. A force transducer comprising a base, a force collector and a flexture a pair of beams spaced from each other and connected at one end of said beams by said flexure, one of said beams connected to the base of said transducer, the other of said beams connected to said force collector in said transducer, a cylindrical bore, part of said bore positioned in each of said beams, a ball freely positioned for motion in said bore and means responsive to the said force collector to sense a force imposed on said force collector.

3,858,144

VOLTAGE STRESS-RESISTANT CONDUCTIVE ARTICLES

Ronald L. Bedard, San Leandro, and Andrew J. Kampe, Half Moon Bay, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 29, 1972, Ser. No. 319,492
Int. Cl. H01c 7/04
U.S. Cl. 338—22 R **10 Claims**



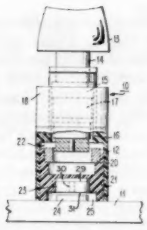
1. In an electrically conductive self-regulating article comprised of at least two spaced-apart metallic electrodes electrically interconnected by a composition containing conductive carbon black dispersed in a crystalline polymeric matrix, the improvement wherein voltage-induced resistance variance is diminished which comprises providing at the electrode surface an effective resistance-stabilizing amount of a material selected from the group consisting of carboxylic acid group-containing polymers of acid number greater than about 3 and the ammonium, alkali or alkaline earth metal salts of such polymers.

3,858,145

MAGNETIC CIRCUIT DEVICE FOR A CONTACTLESS SWITCH OR THE LIKE

Michael Sulich, Endicott, and Albert W. Vinal, Owego, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 263,832, June 19, 1972, abandoned. This application May 4, 1973, Ser. No. 357,284
Int. Cl. H01c 7/16
U.S. Cl. 338—32 H **2 Claims**



1. In an electric pushbutton switch, a key mechanism comprising,

a first member,

a second member movable relative to said first member between first and second switch positions,

a Hall element mounted on said first member and having a sensing surface,

said Hall element being operable for detecting changes in the direction of magnetic field for producing a switching signal,

and a switching magnet mounted on said second member for relative movement therewith between said first and second switch positions,

said switching magnet comprising a cylindrical permanent magnet having parallel faces of opposite polarity,

said permanent magnet having one of said faces proximate said sensing surface of said Hall element and movable transversely thereto during relative movement of said second member from said first to said second switch positions,

said permanent magnet having a cylindrical aperture connecting said parallel faces and parallel with the axis of magnetization thereof,

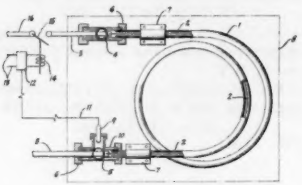
said aperture having an axis perpendicular with said sensing surface of said Hall element and parallel with the direction of relative motion of said first and second members between said first and second switch positions,

said aperture producing a concentrated magmetic field with a field reversal region extending beyond said face of said magnet in the vicinity of said sensing surface,

said field reversal region of said magnetic field being located within the distance of relative movement between said first and second switch positions,

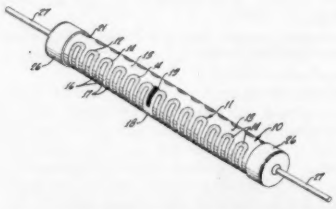
whereby said Hall element is subjected to a reversing magnetic field to produce said switching signal during said relative movement between said first and second switch positions.

3,858,146
ELECTRICAL DISCHARGE RESISTOR
Bent Pors Simonsen, and Hans Imhoff, both of 2700 Peterson Way, 47 B, both of Costa Mesa, Calif. 92626
Filed June 4, 1973, Ser. No. 367,011
Int. Cl. H01c *1/08*
U.S. Cl. 338—55 **8 Claims**



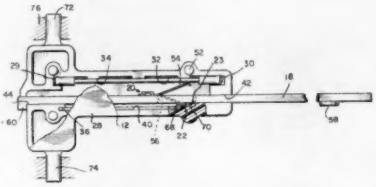
1. A light weight compact portable power resistor useful for applying a resistive load to power supply equipment during intentional or accidental loss of the normal operating load on said power supply including a flexible laminer elongate conductive strip having at least two major surfaces axially disposed within a flexible non-conductive fluid conduit dividing said conduit into a plurality of parallel axial fluid passageways defined by the surfaces of said conductive strip and the interior walls of said conduit and terminating at both ends within said conduit at electric terminals extending into said conduit and electrically conductively connected with the two ends of said conductive strip, said terminals having a conductivity per unit length at least ten times that of said conductive strip, said conductive strip being of substantially constant dimensions along its length and having a width to thickness ratio of at least about 10 and a width at least about 80 percent of the maximum inside diameter of said fluid conduit, said fluid conduit having a coolant inlet and outlet at either end thereof in fluid communication with said axial passageways for passing cooling fluid into and out of said conduit along said axial passageways and along all surfaces of said conductive strip, said fluid conduit and conductive strip being coiled through at least about 360° along the length of said conductive strip.

3,858,147
NON-INDUCTIVE FILM-TYPE CYLINDRICAL RESISTOR
Richard E. Caddock, 640 Sandalwood Ct., Riverside, Calif. 92507
Continuation-in-part of Ser. No. 315,018, Dec. 14, 1972, abandoned. This application Dec. 14, 1973, Ser. No. 424,787
Int. Cl. H01c *3/02*
U.S. Cl. 338—62 **16 Claims**



1. A film-type electrical resistor, which comprises:
a. an elongated cylindrical heat-resistant substrate,
b. an electrically resistive film adherently provided by the silk-screen process on the exterior cylindrical surface of said substrate,
said resistive film comprising an elongated narrow strip of resistive material,
said strip having such a cross-sectional shape, in a direction perpendicular to the length of said strip, that the exterior surfaces of the edges of said strip converge toward said cylindrical surface in a feathered manner, said film being present on substantial portions of said surface, but being absent at a gap which extends along the full length of one side of said surface parallel to the axis of said substrate, and
c. termination means electrically connected to opposite end portions of said resistive film, and permitting connection of said film in an electrical circuit.

3,858,148
RECTILINEAR POTENTIOMETER AND SWITCH
Edgar F. Hauenstine, Frankfort, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Mar. 23, 1973, Ser. No. 344,275
Int. Cl. H01c *9/08*
U.S. Cl. 338—178 **10 Claims**



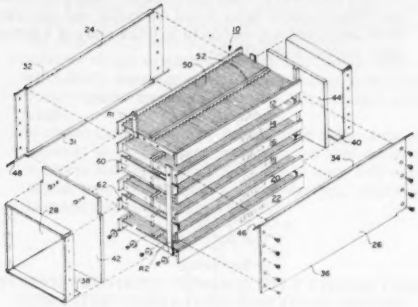
1. A combination linear potentiometer and switch comprising:
a. a housing,
b. apertures in opposed ends of said housing,
c. a collector strip and a resistance strip carried in said housing in spaced substantially parallel relationship,
d. a slider extending through said apertures and movable between said collector and resistance strips and having lugs engaging walls of said housing to limit the travel thereof,
e. electrical contact means carried by said slider engaging said collector and resistance strips, and
f. an electrical insulating means cooperating with at least one of said collector and resistance strips to provide a substantially continuous sliding surface for said electrical contact means, engagement of said electrical contact means with said electrical insulating means providing said switch.

3,858,149
FRAME SUPPORTED GRID RESISTORS
Victor V. Kirilloff, Murrysville, Pa., assignor to Mosebach Manufacturing Company, Pittsburgh, Pa.
Filed Jan. 21, 1974, Ser. No. 434,920
Int. Cl. H01c *1/02*
U.S. Cl. 338—295 **5 Claims**

1. A resistor having a pair of terminals comprising:
1. a plurality of resistor support frames each defining a plane and each having the same shape, the frames are stacked in alignment to form a hexahedron structure;
2. means engaging the hexahedron structure and holding the support frames tightly against each other to maintain the hexahedron structure;
3. resistor means positioned within the plane defined by

each resistor support frame; and

4. means electrically coupling all of the resistor means



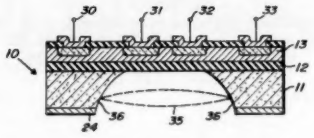
between and to the terminals whereby a resistor is presented between the pair of terminals.

3,858,150

POLYCRYSTALLINE SILICON PRESSURE SENSOR

Richard Warren Gurtler, Mesa, and Ross Wayne Zwernemann, Tempe, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed June 21, 1973, Ser. No. 372,453
Int. Cl. G01l *1/22*
U.S. Cl. 338—2 **11 Claims**



1. A polycrystalline silicon pressure sensor comprising:

a. a substrate support member having a flat upper surface, a flexible inner section, and a rigid peripheral section, relatively thick compared with the flexible section, downwardly disposed to form a support for the flexible section, the member being of a material on which polycrystalline silicon is capable of being deposited;

b. a first layer of polycrystalline silicon formed over the flat upper surface, sufficiently thin to enable flexing with the flexible inner section of the member; and

c. at least one piezoresistive pressure sensitive element of a first conductivity type, formed through the top surface of the first layer over the flexible inner section and extending to the peripheral section.

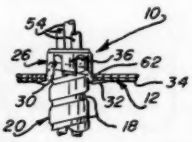
3,858,151

FLEXIBLE CONDUIT CONNECTOR

Joseph Henry Paskert, Lakewood, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed June 4, 1973, Ser. No. 366,341
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **7 Claims**

1. A one-piece, self-retaining metal clip for use in connecting an electrical conduit having a helically grooved outer metal covering and electrical wires therein with a junction box or the like, said clip being adapted to extend through an opening in a wall portion of the junction box, said one-piece metal clip comprising a tubular body portion for extending through the opening in the junction box and into which the electrical conduit extends, said tubular body portion having a first opening at one end thereof through which the electrical wires extend and a second opening at the other end thereof into which said electrical conduit extends, flange means at said other end of said tubular body portion for engaging an outer wall portion of the junction box, said flange means comprising deflectable portions which extend transverse to the axis of said first and second openings and which have surface portions which engage the outer surface of the junction box upon insertion of the clip into the opening in the wall portion of the junction box, retaining arms connected with said tubular portion, said retaining arms projecting outwardly from said tubular body portion and being resiliently deflectable radially inwardly upon insertion of the tubular body portion through the opening in the junction box and springing outwardly upon clearing the wall of the junction box as to engage the inner surface of the wall of the junction box, said retaining arms, in an undeformed position, being separated from said flange means by an axial distance less than the thickness of the wall portion whereby said clip is resiliently clamped to the junction box by said flange means and said retaining arms to positively



electrically ground said clip to said junction box, said tubular body portion also having a pair of inwardly extending tabs having an inner elongated edge disposed along a helix of the same pitch as the helical groove in the metal covering for threaded engagement with the helical groove in said metal covering to threadably connect said metal covering with said tubular body portion and a pair of barbs also formed on said tubular body portion for gripping the helically grooved metal covering of the electrical conduit to effect a grounding of the metal covering to said clip, said barbs being diposed along the same helix as the inner edges of said tabs, said barbs having points thereon defining an inscribed circle of smaller diameter than the minor diameter of said helical groove and said points oriented in the same circumferential direction to allow said metal covering to be threaded into said clip but to resist threaded disengagement of said clip and said metal covering, said tabs and said barbs being spaced from said flange means toward said one end of said tubular body portion whereby said tabs and barbs are disposed within the junction box when the electrical conduit is connected with the junction box.

3,858,152

INTERCEPT CONNECTOR SUITABLE FOR USE IN A TELEPHONE SYSTEM

Charles A. Cowsert, Council Grove, Kans., assignor to Monarch Molding, Inc., Council Grove, Kans.

Filed July 13, 1973, Ser. No. 378,907
Int. Cl. H01r *5/04;* **H05k** *1/02*
U.S. Cl. 339—17 C **3 Claims**

1. An intercept connector operable to be releasably connected to the terminal arms of a terminal block to electrically cross-connect selected pairs of said arms, said intercept connector comprising:

a backing board of non-conductive material having front and rear surfaces bordered by front, rear, and end edges;

a plurality of contact clips located on said front surface of said backing board, each contact clip extending at an acute angle relative to said front edge and comprising a folded metallic strip defining:

a base portion having an inner surface seated on the front surface of said backing board;

a top portion superposed over said base portion; and

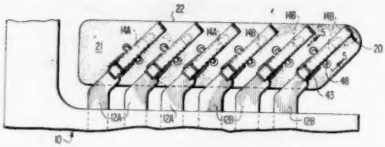
a curved bight portion integral with said top and base portions to define a spring connection therebetween yieldably biasing a distal end of said top portion toward an outer surface of said base portion;

a distal end of said base portion including outwardly projecting retaining flanges defining an arm-receiving mouth;

the distal end of said top portion terminating generally at said receiving mouth and including an angled tip defining a cam lip operable to be raised by an on-coming terminal arm;

said base portion having a pair of spaced tabs located intermediate said retaining flanges and said curved bight portion, said tabs projecting from opposite sides of said base portion and extending through apertures in said backing board, said tabs each including:

a first portion projecting laterally outwardly from a side of said base portion in the plane of said base portion, and



a second portion oriented at a right angle to said first portion and projecting into a respective one of said apertures within a plane oriented perpendicular to said backing board, each of said tabs terminating in said last-named plane at the end of said second portion;

printed circuit means fixed on said rear surface of said backing board including a plurality of metallic conductor paths terminating at the mounting locations of selected pairs of clips; and

a plurality of anchor beads disposed on said rear surface of said backing board at the mounting locations of said clips, said beads being spaced from one another and from said edges of said backing board to present minimal obstruction to the arrangement of said metallic conductor paths; said anchor beads each being formed of solidified metal extending between the second portions of an associated contact clip; said metal being disposed at least partially within said apertures and in adhering relation to both tabs of said associated clip and to an associated circuit path, to anchor said clip to said backing board and establish electrical communication between said clip and said circuit path.

3,858,153

LOW PROFILE CONTACT FOR INSERTION IN PRINTED CIRCUIT BOARD

James Ray Coller, Mechanicsburg, and Robert Franklin Cobaugh, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 24, 1973, Ser. No. 391,426

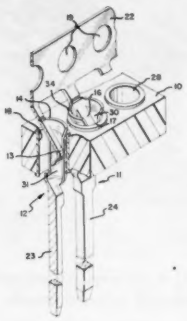
Int. Cl. H05k *1/04;* **H01r** *13/12*

U.S. Cl. 339—17 C **5 Claims**

1. The combination of a stamped, single element, low profile contact inserted through an aperture in a circuit board and comprising:

a partially completed cylindrical section in which a gap parallel to the axis of said cylindrical section exists in the wall thereof;

a flange portion formed around the rim of one end of said cylindrical section and constructed to form a seat for said contact when said contact is inserted in said circuit board; said flange portion being flared outwardly and upwardly from said cylindrical section to facilitate entry of a mating male contact therewith; and



an elongated element formed from the wall of said cylindrical section and extending inwardly into the space defined by said cylindrical section and into said gap;

said gap being sufficiently wide to enable entry of said elongated element therein.

3,858,154

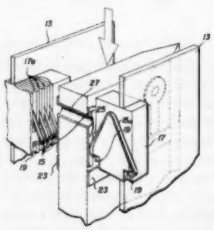
SLIDING THREE DIMENSIONAL PACKAGING TECHNIQUE

A. Reimer William, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 2, 1973, Ser. No. 412,525

Int. Cl. H01r *33/18;* **H05k** *1/12*

U.S. Cl. 339—17 LM **3 Claims**



1. Apparatus for electrically interconnecting selected circuit signal points on adjacently positioned printed circuit cards and on a plurality of printed circuit cards comprising:

a plurality of connector cards;

contact means including connector contacts mounted on each of said connector cards and extending between said circuit cards for establishing a direct electrical connection between adjacent ones of said circuit cards;

track means on said circuit cards for engaging and carrying said connector contacts as said circuit cards are positioned adjacent to and on opposite sides of said contact means; and

said connector contacts are arranged in rows across each of said connector cards parallel to the direction in which said circuit cards are interleaved between said connector cards and wherein said track means comprises hard insulative strips disposed across both sides of said circuit cards to correspond to said connector contact rows on said connector cards, said connector contacts sliding on

said strips as said circuit cards are inserted between said connector cards;

circuit access means disposed on each of said circuit cards adjacent to said track means and coupled to corresponding ones of said selected signal points; and

conductor means extending through said circuit cards for electrically interconnecting corresponding ones of said circuit access means on opposite sides of said circuit cards,

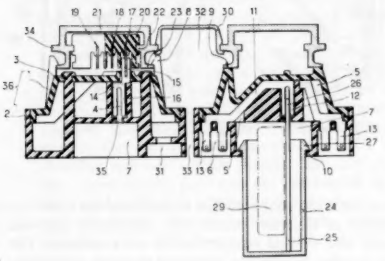
said circuit cards being repositioned after being positioned adjacent to said contact means so that said connector contacts slide from said track means onto said circuit access means to establish a direct electrical connection between said circuit cards.

3,858,155

SYSTEM PROVIDING POWER SUPPLY CONNECTIONS AND INTERCONNECTIONS FOR LOGIC BLOCKS

Guy Henri Lacan, Carrieres Sous Bois, and Andre Lucien Haury, Le Raincy, both of France, assignors to La Telemecanique Electrique, Nanterre, France

Filed Apr. 4, 1973, Ser. No. 347,628
Claims priority, application France, Apr. 4, 1972, 72.11719
Int. Cl. H01r *13/54*
U.S. Cl. 339—22 R **4 Claims**



1. Coupling and supporting means for logic blocks having first and second connecting means, said supporting means providing power supply connections to said blocks and interconnections between said blocks, said supporting means comprising:

elongated means (**21**) of U-shaped cross-section having side walls fitted with first clamping means (**23, 24**) and having power supply leads (**17, 18, 19**) fitted in its internal part; a plurality of sockets (**36**) respectively associated with said logic blocks, each socket having side walls, a back surface provided with second clamping means (**8**) capable of removably engaging with said first clamping means and a front surface, exhibiting a main cavity for receiving at least a portion of a logic block, said front surface being provided with securing means (**10**) for retaining said block;

first contact means (**14**) in said socket having a first extremity (**15**) in which said supply leads engages, and a second extremity (**16**) in which said first connecting means of said block engages;

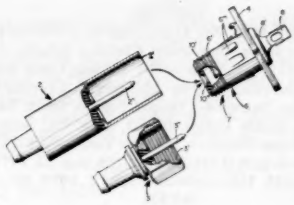
second contact means (**11**) having a first extremity (**12**) in which said second connecting means of said blocks engages, and a second extremity (**13**) located at said front surface of the socket, in the proximity of said main cavity and of one of said socket side walls, the various blocks being intercoupled by intercoupling said second extremities of said second means of the sockets respectively associated to said various blocks.

3,858,156

UNIVERSAL FEMALE COAXIAL CONNECTOR

Michael Zarro, Fords, N.J., assignor to Blonder-Tongue Laboratories, Inc., Old Bridge, N.J.

Filed Dec. 19, 1973, Ser. No. 426,223
Int. Cl. H01r *27/00, 17/18*
U.S. Cl. 339—32 **4 Claims**



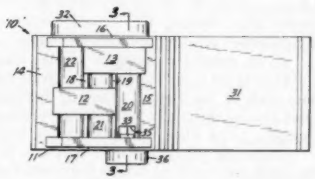
1. A universal female coaxial connector for both push-on and threaded connection usage, having, in combination, a cylindrical outer conductor member extending from one side of a conductive flange and internally containing a resilient inner-conductor contact means insulatingly mounted therein; inner-conductor terminal means insulatingly carried within said member, connected to said inner-conductor contact means, and extending from the other side of said flange; said member terminating beyond said contact means in a threaded section adapted to permit threaded attachment to connectors having external outer-conductor interiorly threaded terminal means, and carrying between said threaded section and said one side of the flange an external sleeve containing resilient flap means extending outwardly therefrom for enabling push-on connection with the interior of connectors having interiorly smooth external outer-conductor terminal means of inner diameter slightly greater than that of the outer diameter of the threads of said threaded section; the threads of the said threaded section serving as a stop for the said sleeve, and the outer conductor member serving as a limiting stop for the depth of threaded connection of the threaded section within threaded terminal means; and the said inner-conductor contact means receiving male inner-conductor terminals of all said terminal means, resiliently to engage and to permit disengagement therefrom.

3,858,157

SOLDERLESS TAP CONNECTOR

James H. Bazille, Jr., North Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 19, 1974, Ser. No. 443,368
Int. Cl. H01r *11/20*
U.S. Cl. 339—98 **7 Claims**



1. In a connector assembly for making solderless in-line, pigtail or tap electrical connection between insulated wires and comprising a base having parallel longitudinal wire-supporting channels and being grooved transversely of said channels, and a resilient slotted metal plate contact element

fitting within a said groove and with slots in alignment with said wire-supporting channels, the improvement comprising a resiliently displaceable stop member extending from a wall of said channel and blocking said channel between an outermost groove and the adjacent end of the channel, and said base being recessed to provide an open space adjacent said stop member for receiving said stop member upon its displacement under forceful insertion of a wire into said channel.

3,858,158

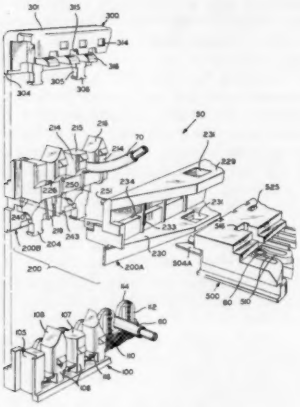
DEVICES FOR MAKING ELECTRICAL CONNECTIONS

Robert Walter Henn, Dunwoody; Christian Scholly, Atlanta; James Emery Voytko, Doraville; Thomas Leslie Williford, Jr., Lawrenceville; Charles McGonigal, Grayson; Dean Rudisill Frey, Dunwoody; Donald Tolman Smith, Norcross, and Arthur Guntis Vedejs, Duluth, all of Ga., assignors to Western Electric Company, Inc. New York, New York

Continuation-in-part of Ser. No. 210,750, Dec. 22, 1971, Pat. No. 3,772,635. This application June 1, 1973, Ser. No. 365,931

Int. Cl. H01r *9/08*

U.S. Cl. 339—99 R **20 Claims**



1. An electrical connector, which includes:

a first dielectric block having a plurality of spaced conductor-holding openings formed in groups with the spacing between adjacent openings of adjacent groups being different from that between adjacent openings within a group;

a second dielectric block adapted to be mounted to the first dielectric block and having a plurality of elongated contact elements spaced along and secured therein, each of the contact elements having conductor-receiving slots at opposite ends thereof, the second dielectric block having conductor-receiving openings into which protrude one end of the contact elements to engage electrically conductors received in the conductor-receiving openings, the other ends of the contact elements insertable into associated ones of the conductor-holding openings in the first dielectric block when the second block is mounted thereto to cause the conductors held therein to be moved into the conductor-receiving slots in the contact elements to make electrical engagement withthe walls thereof, and be connected electrically to the conductors in the second dielectric block, the second dielectric block also having a plurality of access openings aligned with associated ones of the contact elements; and

a third dielectric block having conductive elements secured therein capable of being connected electrically to conductors held in spaced openings formed in the third dielectric block, the third dielectric block adapted to be connected to the second dielectric block to extend ends of the conductive elements thereof into the access openings to engage electrically associated ones of the contact elements;

the second dielectric block capable of being constructed in a length corresponding to one or more of the groups of conductor-holding openings in the first dielectric block to permit selective mounting of ones of the second dielectric blocks along the first dielectric block;

the third dielectric block capable of being constructed in a length corresponding to the length of the second dielectric block or a portion thereof to which the third dielectric block is to be connected.

3,858,159

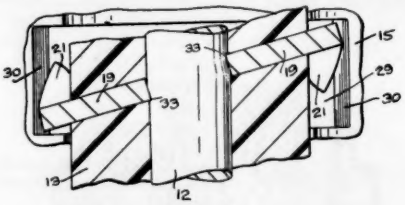
ROUND CONDUCTOR FLAT CABLE CONNECTOR

Sidney V. Worth, Flourtown, Pa., assignor to Continental-Wirt Electronics Corporation, Warminster, Pa.

Filed Aug. 10, 1973, Ser. No. 387,485

Int. Cl. H01r *9/06*

U.S. Cl. 339—99 R **12 Claims**

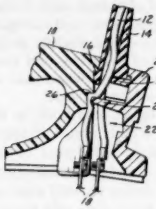


1. An electrical connector for an insulated flat cable having a plurality of insulated round wire conductors disposed in coplanar side by side relation within an enveloping film of plastic or other penetrable insulating material comprising an insulated structure secured to the cable in transversely extending relation to the conductors thereof and a plurality of electrically conductive metal contact members respectively mounted in said structure crosswise of the longitudinally extending axes of the cable conductors, each of said contact members having a terminal part for connection to an electrical circuit or component thereof and a retention part internally nested in said structure, said retention part having an end thereof bifurcated to provide a pair of spaced-apart sharply-pointed prongs for piercing the cable in straddling relation to an insulated conductor thereof, said prongs having opposed sharply cornered cutting edges for slicing through the insulation and electrically engaging the wire of said insulated conductor, said conductor-straddling prongs of each of said contact members being disposed in a common plane so angularly oriented relatively to the longitudinal axis of the conductor wire engaged thereby that said sharply cornered cutting edges of the prongs engage and bite into the conductor wire at points offset from one another lengthwise of the conductor wire for imparting a bend thereto whereby to place it under tension in the immediate region of its engagement by said prongs, the end portions of said conductor-straddling prongs of each of said contact members being extended beyond the conductor embraced therebetween for conjoint clinching of said prongs against said conductor-wire engaged thereby, and means in said structure for camming said prongs into their said clinched condition about said conductor wire, said camming means being operative to establish a force which reacts against the restrained tendency of the conductor to assume its straightened condition to thereby hold said prongs tightly engaged with the conductor wire.

3,858,160
APPLIANCE STRAIN RELIEF

Bryce A. Denton, Ontario, Calif., assignor to General Electric Company, Bridgeport, Conn.

Filed Mar. 5, 1973, Ser. No. 338,154
Int. Cl. H01r 13/58
U.S. Cl. 339—107 7 Claims



1. For use in a portable electric appliance cord-connected to internal terminals by a portion of the cord having separated conductors connected thereto, the improvement in a strain relief connection between the cord and appliance comprising,

a housing chamber in the appliance at the entrance of the cord to the appliance and containing the conductors loosely therein,

said chamber having a generally U-shap with a central fastening hole and a step portion spanning the chamber completely around the sides of the U adjacent the hole,

a chamber cover having tongue means extending therefrom toward and coextensive with the step portion,

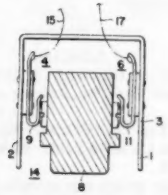
a protected recess in said cover having means therein engaging said hole to secure the cover to the housing,

whereby the separate loosely disposed conductors straddle the securing means anywhere in said U-shaped chamber and said tongue extends into said chamber and automatically positions the conductors in strain relief against the step portion anywhere along its length and also blocks the external cord from entering the chamber when the cover is tightened to said housing.

3,858,161
BOX FOR ELECTRICAL CONNECTIONS

Mary J. Champion; Clarence C. Pottle, and Joseph H. Gerber, all of Brooklyn, N.Y., assignors to The Raymond Lee Organization, New York, N.Y., a part interest

Filed Aug. 8, 1973, Ser. No. 386,767
Int. Cl. H01r 15/18
U.S. Cl. 339—122 R 2 Claims



1. A box for electrical connections for electrically connecting wall type units to a power source, comprising

an electrical connection box having a pair of opposite spaced substantially parallel sides;

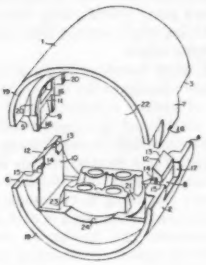
electrical contact means mounted on the pair of sides in the box for releasably contacting electrical wall type units moved into the box, the electrical contact means comprising a plurality of contact units each having a first member of electrically insulating material adjacent the box, a spring-like electrical contact member adjacent the first member and a second member of electrically insulating material adjacent the contact member thereby sandwiching the electrical contact member between the first and second insulating members; and

electrical connecting means electrically connecting the electrical contact means to a source of power.

3,858,162
SNAP-LOCK BASE FOR ANNULAR FLUORESCENT LAMPS

Gunter Mai, and Herbert Pietzsch, both of Munich, Germany, assignors to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany

Filed May 9, 1973, Ser. No. 358,790
Claims priority, application Germany, May 19, 1972, 7218982
Int. Cl. H01r 33/74
U.S. Cl. 339—145 D 8 Claims



1. A base for an annular fluorescent lamp having an envelope with a protruding exhaust tube, said base comprising;

a pair of generally semicylindrical-shaped components of resilient insulating material having integral interfitting portions operable to lock said component together in closed abutting relationship solely by means of a snap-fit, one of said base components having an inwardly-recessed segment which carries a plurality of contact pins,

each of said base components having walls of such thickness and being of such configuration that they define, when snap-fitted together in assembled relation, a chamber of sufficient size to accommodate the ends of the lamp envelope and exhaust tube despite variations in the length and alignment of said exhaust tube,

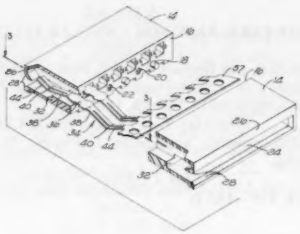
said interfitting portions comprising a pair of covering flaps that laterally project beyond the longitudinal edges of one of said base components and a pair of mating recessed flaps that laterally project beyond the longitudinal edges of the other of said base components and define recesses in the exterior wall thereof which are shaped and dimensioned to receive and accommodate said covering flaps, one of said covering flaps having a notch-like opening in its longitudinal edge through which the base components can be mechanically separated from snap-fitted relationship with one another, and

said covering flaps being of such configuration that they form a substantially smooth exterior surface with the base component having the recessed flaps, when said base components are snap-fitted together and said covering flaps are seated in said recesses.

3,858,163
PRINTED CIRCUIT BOARD CONNECTOR

David S. Goodman, Orange, and Harold J. Prow, Jr., Costa Mesa, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 6, 1973, Ser. No. 367,516
Int. Cl. H01r 3/00
U.S. Cl. 339—176 MP 3 Claims



1. A printed circuit board connector comprising:

a two-piece insulated housing member consisting of a pair of mated parts joined along facing edges thereof, said parts having edges remove from and generally parallel to said facing edges;

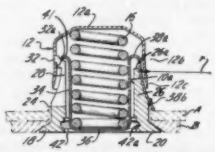
a printed circuit board receiving slot formed in each of said parts and opening at the respective remote edge thereof; a row of contact compartments formed in each of said parts, corresponding compartments in said rows being longitudinally aligned and opening at the respective facing edges of said parts to provide interconnected pairs of said compartments, said slot and said compartments in each said part being in communication with each other; a unitary contact mounted in each of said interconnected compartments and having an intermediate mounting portion and oppositely extending integral spring elements formed with contacting portions positioned in said slots to engage conductive layers on printed circuit boards inserted into said slots whereby said layers are electrically interconnected by said contact;

said contact compartments in each said part being sufficiently large to permit insertion of said contact spring elements thereinto from the facing edge of said part; and said mounting portions of said contacts being rigidly secured to wall portions of said compartments adjacent to said facing edges of said parts.

3,858,164
CONNECTING DEVICE AND MANIPULATING TOOL

George Hamlin Leonard, 327 Hollow Tree Ridge Rd., Darien, Conn. 06820

Filed May 25, 1972, Ser. No. 256,782
Int. Cl. H01r 11/00; A44b 17/00; B67b 7/00
U.S. Cl. 339—252 R 27 Claims



1. A connecting device, including

i. a body having an outward-extending flange and a portion extending rearward of said flange and being receivable in a hole in apparatus to which the connecting device is to be secured with the flange pressed against a bearing surface adjacent to said hole in said apparatus;

ii. a claw unit including multiple elongated claws movable forward and rearward along said rearward extending portion of said body, said elongated claws having abutment ends movable generally forward and slightly outward into positions opposite said flange for engaging an abutment surface of said apparatus adjacent to the hole therein and said abutment ends being movable reversely into retracted positions, said elongated claws extending generally rearward and slightly inward from said abutment ends thereof, whereby said elongated claws are in lengthwise compression when said abutment ends bear against such abutment surface;

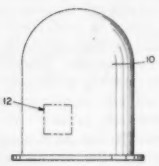
iii. a shroud secured to said body so that said shroud and said body form a body unit, said shroud having a rim for restricting outward movement of said elongated claws both in retracted and projected positions thereof; and

iv. spring means acting on said claw unit and reacting on said body unit for biasing said flange and said abutment ends of said claws generally toward each other for gripping the apparatus adjacent to the hole therein.

3,858,165
ACOUSTICAL WINDOW FOR SONAR SYSTEMS

Ronald L. Pegg, Costa Mesa, Calif., assignor to Haveg Industries, Inc., Wilmington, Del.

Filed July 29, 1970, Ser. No. 59,329
Int. Cl. G01s 9/66
U.S. Cl. 340—3 R 21 Claims



1. In a sonar system comprising apparatus for transmitting and receiving signals and a housing in which said apparatus is enclosed, said housing including an acoustical window through which signals pass, the improvement comprising: said acoustical window being a composite structure comprising a cured composite laminate of layers of fiber said fiber being selected from the group consisting of Type E glass, carbon and graphite, said fibers being impregnated with epoxy resin, and said epoxy resin containing high strength glass microspheres or elastomeric polymer.

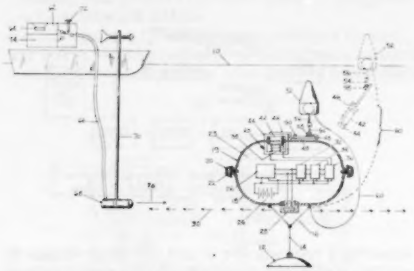
3,858,166
RECOVERABLE UNDERWATER ACOUSTIC BEACON

John W. Hammond, York, Pa., assignor to Charles D. Briddell, York, Pa.

Filed Dec. 26, 1973, Ser. No. 428,026
Int. Cl. B63b 21/52; B63c 7/26
U.S. Cl. 340—5 R 7 Claims

1. A recoverable underwater acoustic beacon system comprising in combination, mechanism to be anchored at a desired location relative to the bed of a body of water and including an anchor to be disposed upon said bed and an acoustic beacon connected thereto for positioning below the upper level of said body of water, electrically-powered acoustical signal-producing means within said beacon operable automatically to emit signals at periodic time intervals, receiving means within said beacon responsive to an acoustic impulse from an exterior source, a bouyant marker and a tether extending between said marker and said anchored mechanism, magnetically operated latch means on said anchored mecha-

nism operable normally to secure said buoyant marker in desired position below the upper level of said body of water, and acoustical electrical impulse-receiving means operable relative to said latch means when said signal receiving means receives an impulse from said exterior source to neutralize the



magnetic effect of said latch means and thereby cause said latch to release said buoyant marker and permit it to rise to the upper surface of said body of water while tethered to said anchored mechanism and thereby disclose the location thereof for retrieval.

3,858,167

ARRANGEMENT FOR DETERMINATION OF THE CONTINUITY OF THICKNESS AND OF STRUCTURAL-TECTONIC ELEMENTS OF MINEABLE LAYERS, PARTICULARLY OF COAL SEAMS

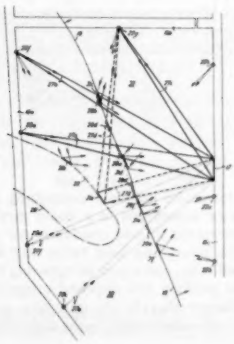
Bretislav Stas; Ludek Dlouhy; Lubomir Siska, and Adolf Skrabis, all of Ostrava, Czechoslovakia, assignors to Vedeckovyzkumny uhelny ustav, Ostrava-Radvanice, Czechoslovakia

Filed June 12, 1972, Ser. No. 262,071

Claims priority, application Czechoslovakia, June 29, 1971, 4774-71

Int. Cl. G01v *1/14*

U.S. Cl. 340—15.5 SW **3 Claims**



1. Arrangement for determination of the continuity of thickness and of structural-tectonic elements of mineable layers, particularly of coal seams, having a reduced elasticity with respect to surrounding rocks, forming their rock cover and bedrock, providing a multicomponent blast base directionally orientated, composed of charges arranged along a line forming an angle of 45° to 135° with respect to the direction of the main beams of a transverse seam wave, a fuse for discharge of said charges, a generator of oscillations, a registration base composed of a number of seismic pick-up devices, said seismic pick-up devices arranged at the edge of a free surface, created by partial interruption of the coal seam by a mine gallery, a seismic amplifier having a number of inputs and at least one output, a registration device, a time standard, a DC voltage source for the seismic amplifier and a supply source for energizing the registration device and the time standard, the generator of oscillations connected to the fuse for discharge of the charges, the generator of oscillations connected to a first input of the seismic amplifier, to a second input of the seismic amplifier the DC voltage source being connected, other inputs of the seismic amplifier connected to groups of seismic pick-up devices, the output of the seismic amplifier connected to the registration device, which in turn is connected to the time standard, both being energized from the supply source.

3,858,168

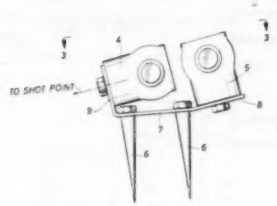
METHOD OF FILTERING MULTI-COMPONENT SEISMIC DATA

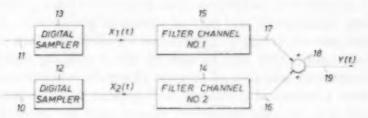
Frederick J. Barr, Jr., and Clifford H. Ray, both of San Antonio, Tex., assignors to Petty-Ray Geophysical, Inc., Houston, Tex.

Filed Sept. 13, 1972, Ser. No. 288,686

Int. Cl. G01v *1/28*

U.S. Cl. 340—15.5 CP **4 Claims**





1. In the method of seismic prospecting in which signals are separately but simultaneously received from a substantially vertical direction and a substantially horizontal direction and separately recorded as first and second signals representative of first and second functions of time, respectively, the improvement comprising:

a. passing said first signal through a first channel including a digital filter to produce a third signal representative of a third function of time;

b. passing said second signal through a second channel including a digital figure to produce a fourth signal representative of a fourth function of time;

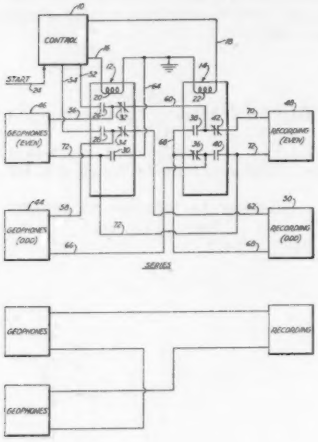
the coefficients of said digital filters being selected such that, with respect to each of a plurality of selected frequencies, the sum of said third and fourth signals is substantially zero when the first signal is 90° out of phase with the second signal and said sum is substantially equal to said first signal when the first signal is in phase with the second signal; and

c. summing the third and fourth signals, thereby producing a fifth signal representative of a fifth function of time, in which ground-wave noise is significantly attenuated.

3,858,169
GEOPHONE IMPULSE TESTER

Thomas Bardeen, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 26, 1973, Ser. No. 344,548
Int. Cl. G01v *1/00*
U.S. Cl. 340—15.5 CP **9 Claims**



1. A method of testing a pair of seismic channels, each of said channels comprising a string of geophones and a recording means adapted to record the impulses sensed by said geophones, comprising the steps of producing an impulse having a predetermined time duration which is substantially shorter than the natural period of each geophone in said string of geophones, supplying said impulse of said predetermined time duration to said pair of strings of geophones, connecting said pair of strings of geophones together in phase opposition with each other and to one of the recording means of one channel of said pair of seismic channels, whereby a deviation from a balanced condition will appear as a deviation from a null line on said recording means and the direction of the deviation from said null line is indicative of which string of geophones of said pair of strings of geophones is not normal.

3,858,170
VIBRATOR PERFORMANCE MONITOR

Francis R. Freeman, and Joseph F. Metrailer, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

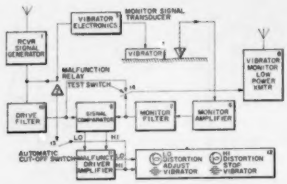
Filed Oct. 23, 1973, Ser. No. 408,355
Int. Cl. G01v *1/14*
U.S. Cl. 340—16 C **20 Claims**

1. In a seismic prospecting system utilizing at least one individual earth vibrator for generating seismic signals at a pattern of separated locations on the surface of the earth in accordance with a predetermined electrical driving signal, the method of monitoring individual vibrator operation comprising the steps of:

a. producing a monitor electrical signal corresponding to each said seismic signal injected into the earth by said individual vibrator at each vibrator location;

b. amplifying each said monitor electrical signal such that its amplitude approximately equals the amplitude of said predetermined electrical driving signal;

c. comparing each said amplified monitor and said predetermined electrical driving signal such that a first malfunction signal is produced when said signals differ in a first predetermined amount indicative of faulty vibrator operation; and

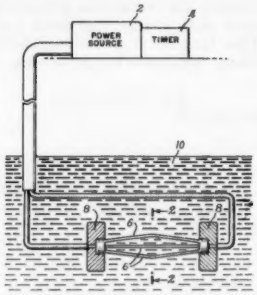


d. actuating a first indicator at said individual vibrator by said first malfunction signal, whereby the operator of said individual vibrator can be altered to the fact that his equipment is not operating correctly and should be adjusted.

3,858,171
ELECTRIC SONIC IMPLODER

Joseph Pauletich, 91-18, 43rd Ave., Elmhurst, N.Y. 11373

Filed Oct. 12, 1972, Ser. No. 297,079
Int. Cl. H04b *13/00*
U.S. Cl. 340—12 R **3 Claims**



1. An underwater sound imploder comprising at least one bare wire conductor submerged in a liquid medium, a low voltage source connected to said conductor for supplying a current therein for generating heat below the vaporization temperature of said wire, and a pair of opposing baffle plates submerged in said medium and disposed respectively at the ends of said conductor whereby the implosion generated by said device is confined substantially to the region between said baffles.

3,858,172
ALTITUDE DETECTING INSTRUMENT

Richard D. Henry, Hookstown Grade Rd., R.D. No. 1, Clinton, Pa. 15026

Filed Mar. 5, 1973, Ser. No. 337,928
Int. Cl. G08g *5/02*
U.S. Cl. 340—27 NA **25 Claims**

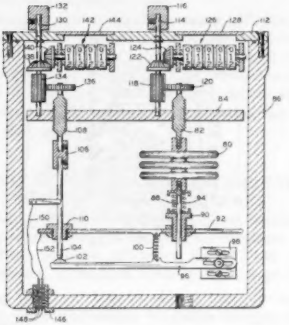
1. In a barometric instrument:

a control circuit and signal means responsive to said control circuit as the pilot either ascends or descends through a predetermined altitude, said control circuit comprising an

ascent circuit and a descent circuit, a manual combination arming and disarming switch having a first position wherein the ascent circuit is armed and the descent circuit is disarmed and a second position wherein the descent circuit is armed and the ascent circuit is disarmed, a pressure responsive element having adjustment means making such pressure responsive element energizable at a predetermined altitude,

a switch operated by said pressure responsive element,

and a relay switch responsive to said pressure responsive element operated switch to a first position for connecting



a power source to said signalling means through said manually controlled switch and said ascent circuit as the plane is ascending through the predetermined altitude, said manually operated switch being effective in its second position for simultaneously disarming the ascent circuit and arming the descent circuit as the aircraft ascends through a predetermined altitude to deactivate the signalling means, said pressure responsive operated switch being operable as the aircraft descends through the predetermined altitude to again energize said signalling means through said descent circuit by operation of said relay controlled switch means.

3,858,173

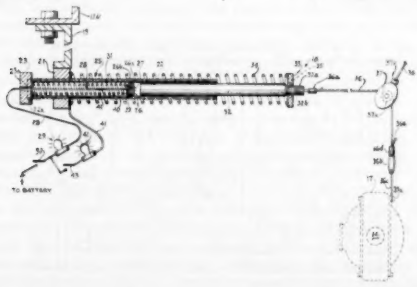
SENSOR OF VEHICLE LOAD OR OVERLOAD

Ward H. Ryan, 2146 Virginia Ave., Phoenix, Ariz. 85009

Filed June 1, 1973, Ser. No. 366,086

Int. Cl. G08b *21/00*

U.S. Cl. 340—52 R **11 Claims**



1. A load or overload sensor for a frame supported, load supporting area, said frame being yieldably supported, as by leaf spring means above vehicle axle means, said sensor including a frame carried, first contact carrier, horizontally, longitudinally adjustable with relation to said frame and carrying compression spring means at maximum extension disposing an insulative first contact positioning means that disposes said first contact for closure with a second contact of said sensor responsive to downward movement of load supporting area and frame corresponding with a predetermined elevation, said second contact being carried by a second contact carrier including a connection means with the rear end of a tension spring connected thereto, the forward end of said tension spring being yieldably connected to said frame, a frame suspended pulley and a second contact connected cable means passing over said pulley and affixed to vehicle axle journal means, insulative conductor means carrying circuit from said first contact to indicia means, actuated upon contact closure, to render load indication, said first contact positioning means being horizontally slidable with relation to said first contact carrier and said compression spring being yieldably urged in contraction responsive to further increase in load after circuit closure between said first and second contacts.

3,858,174

TIRE PRESSURE MONITORING SYSTEM

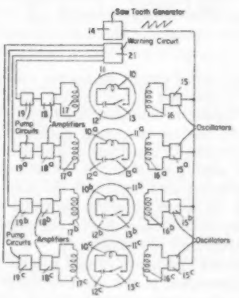
Paul Anthony Harris, Stonnall, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed July 26, 1973, Ser. No. 382,848

Claims priority, application Great Britain, Aug. 3, 1972, 36222/72

Int. Cl. B60c *23/02*

U.S. Cl. 340—58 **2 Claims**



1. A tire pressure monitoring system including a tuned circuit rotating with the tire to be monitored, the tuned circuit including a pressure-responsive switch, said system further including a variable frequency transmitter supplying energy to the tuned circuit, a controller producing a ramp voltage at a predetermined frequency which is low relative to the frequency range of said transmitter, means coupling said controller to said transmitter, the frequency of said transmitter being determined by said ramp voltage, whereby said transmitter transmits signals over a band of frequencies, and a receiver for detecting energy in the tuned circuit, said band of frequencies including the resonant frequency of the tuned circuit.

3,858,175

MOTOR VEHICLE ELECTRONIC SECURITY ALARM SYSTEM USING SEQUENCE CONTROL ARMING

Joseph J. Kopera, Jr., Trenton, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 8, 1972, Ser. No. 287,401

Int. Cl. B60n *25/10*; **G08b** *13/08*

U.S. Cl. 340—63 **2 Claims**

1. In a motor vehicle having a hood member, a trunk member, a plurality of door members, exterior lights, a horn, and

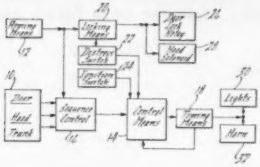
an electrical power supply, an electronic security alarm system comprising:

a plurality of switch means each located at a corresponding one of said vehicle members, each said switch means being normally in a first position indicating that the corresponding member is in closed position and being actuable to a second position whenever the corresponding member is opened;

arming means operatively associated with a key-actuated lock of the motor vehicle and responsive to the actuation of a key in the lock to provide an arming signal for arming the security alarm system;

a plurality of locking means each associated with a corresponding one of said door members and of said hood member and responsive to said arming signal and to the first position of the corresponding switch means for locking the corresponding member in its closed position;

control means operatively coupled with said arming means and all said switch means for providing a control signal, said control means comprising first control circuit means for providing said control signal in response to said arming signal and to actuation of the switch means associated with the hood member from its first to its second position,



second control circuit means for providing said control signal in response to said arming signal and to actuation of the switch means associated with the trunk member from its first to its second position, and third control circuit means for providing said control signal in response to said arming signal and to actuation of any one of the switch means associated with the door members from its first to its second position provided that all said door member switch means have been previously actuated to their respective first positions;

timing means responsive to said control signal and electrically connected to the exterior lights and the horn for pulsing the exterior lights and horn with electrical power from the electrical power supply in response to said control signal; and

a distress switch operatively coupled with said locking means and said control means, said distress switch being located within said vehicle and actuable by an occupant of the vehicle to actuate both said locking means and said control means independently of said arming means and of all said switch means whereby to prevent unauthorized entry into the vehicle and to pulse the exterior lights and the horn.

3,858,176

ELECTRICAL SWITCH ASSEMBLY

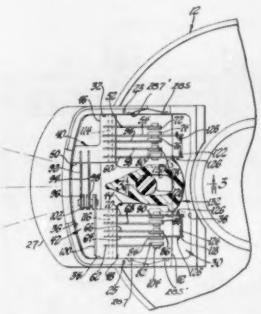
Gerald K. Miller; Dale L. Bull, and Norman A. Rautiola, all of Reed City, Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed May 3, 1972, Ser. No. 250,048

Int. Cl. B60q *1/34*; H01h *3/16*, *9/00*

U.S. Cl. 340—73 **29 Claims**

1. An electrical switch assembly, comprising a support body, cam means carried by said support body, said cam means being movable to and from various operating positions, lever means operatively connected to said cam means for selectively pivotally moving said cam means to and from certain of said various operating positions and for translationally moving said cam means to and from other of said various operating positions, a plurality of electrical contacts carried by said support body and leading to associated electrical circuitry, said plurality of electrical contacts being arranged in generally close proximity to said cam means as to be generally in the path of movement of said cam means when said cam means is moved to and from said various operating positions to thereby be selectively acted upon for opening and closing movement thereof by said cam means, said plurality of electrical contacts being adapted for electrical connection to related electrical circuitry, resilient means effective for resiliently resisting pivotal movement of said cam means by said lever



means towards said certain of said operating positions the same said resilient resistance means also being effective for resiliently resisting translational movement of said cam means by said lever means toward said other of said operating positions, said resilient resistance means being effective to progressively increase the magnitude of resilient resistance as said cam means is moved toward any and all of said operating positions, and additional means effective for resiliently latching said cam means in any of said operating positions when said cam means has been moved to said any of said operating positions.

3,858,177

VEHICLE BLINK PULSE GENERATOR MANUFACTURABLE ON AN INTEGRATED CIRCUIT BASIS

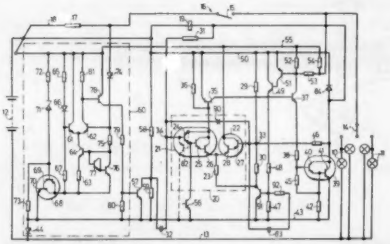
Adolf Kugelmann, Leonberg; Gerhard Conzelmann, Leinfelden; Ewald Henninger, Friolzheim; Dieter Meyer, Feucht, and Hartmut Seiler, Reutlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed June 13, 1973, Ser. No. 369,583

Claims priority, application Germany, July 24, 1972, 2236210

Int. Cl. B60g *1/38*

U.S. Cl. 340—73 **24 Claims**



1. A blink pulse generator suitable for directional lights of a motor vehicle and producible largely with integrated circuit units comprising, in combination with a voltge source (**12**), a selector switch (**14**) and a plurality of directional lights (**10** or

11) for connection in circuit in each active position of said selector switch:

an amplifier (20) connected with its input across the diagonal of a bridge circuit composed of resistors and a capacitor (32) and with its output connected with a first switching means (39) for causing said amplifier to operate as an astable multivibrator by causing said capacitor (32) to charge and discharge between two limit potentials provided at at least one extremity of said bridge diagonal, the output of said first switching means (39) being connected for that purpose to a resistor (46) connected at its other end to an extremity (33) of said diagonal of said bridge, said output of said first switching means (39) being also connected to operate a second switching means (15, 16) for flashing the directional lights connected in circuit by said selector switch (14), and

means including a third switching means (57) for modifying the frequency of said operation of said amplifier (20) as an astable multivibrator by change of at least one of said limit potentials at at least one extremity of said diagonal of said bridge, said third switching means (57) being controlled by an electrical signal indicating the condition of said directional lights.

3,858,178

DIRECTION INDICATOR SYSTEMS FOR TRACTOR-TRAILER VEHICLES

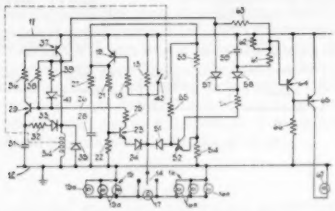
David Blackburn Harrison, Radlett, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Sept. 17, 1973, Ser. No. 397,738

Claims priority, application Great Britain, Sept. 16, 1972, 43045/72

Int. Cl. G08b *5/38;* **B60q** *1/26*

U.S. Cl. 340—80 **5 Claims**



1. A direction indicator system for a tractor-trailer vehicle, comprising at least two left-hand and at least two right-hand direction indicator lamps on the tractor vehicle, at least one left-hand direction indicator lamp and at least one right-hand direction indicator lamp on the trailer vehicle, the left-hand and right-hand direction indicator lamps on the trailer vehicle being connected in parallel with the left-hand and right-hand direction indicator lamps on the tractor vehicle respectively, a direction indicator switch for completing a circuit to either the left-hand or the right-hand direction indicator lamps, a first pilot lamp connected between the circuit to the left-hand and right-hand direction indicator lamps so that when the direction indicator lamps on one side of the vehicle are selected, the first pilot lamp is energised by way of the direction indicator lamps on the other side of the vehicle and flashes in synchronism with the selected direction indicator lamps, an oscillator controlling the supply of power by way of the direction indicator switch to the selected direction indicator lamps, so that the selected direction indicator lamps flash at a frequency determined by the oscillator, means operable when at least two of the direction indicator lamps selected by the direction indicator switch fail for altering the frequency of said oscillator so that the first pilot lamp flashes at a different frequency, a second pilot lamp, switching means controlled by said oscillator for causing said second pilot lamp to flash in synchronism with the first pilot lamp, and means operable when one of the direction indicator lamps selected by the direction indicator lamps fails for preventing flashing of said second pilot lamp.

3,858,179

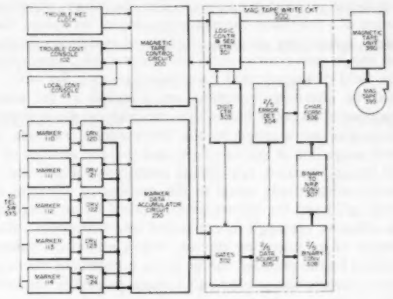
ERROR DETECTION RECORDING TECHNIQUE

Donald W. McLaughlin, Bolingbrook, and Panayote D. Makantassis, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 2, 1973, Ser. No. 347,262

Int. Cl. G05b *23/02;* **H03k** *13/32*

U.S. Cl. 340—146.1 R **6 Claims**



1. For use in a telephone system data recording subsystem wherein coded characters representative of call switching data are transmitted from telephone switching equipment to data recording means, a data error detector comprising:

a code error detector connected to a source of coded data, operated in response to detection of an error in the coding of said data,

an output circuit connected to said data recording means, including a plurality of signal drivers, each connected to said recording means,

and a plurality of latch circuits connected between said error detector and a portion of said signal drivers, initially operated in response to the conduction of error free coded data to said error detector, to operate said portion of signal drivers to transmit a first plurality of predetermined signals to said recording means, said plurality of signals forming a portion of the coded data recorded by said recording means.

3,858,180

SYSTEM FOR AUTOMATICALLY READING SYMBOLS

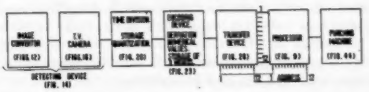
Arie Adriaan Spanjersberg, Leiderdorp, Netherlands, assignor to De Staat der Nederlanden, Ten Deze Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, Korternaerkade, The Hague, Netherlands

Filed Feb. 14, 1972, Ser. No. 225,839

Claims priority, application Netherlands, Feb. 19, 1971, 7102210

Int. Cl. G06k *9/12*

U.S. Cl. 340—146.3 F **35 Claims**



1. A system for reading symbols, preferably figures, which may be hand-written on an information carrier (form), an arrangement of rectangles being provided on the information carrier (form), one rectangle for each symbol to be entered, characterized in that the width-to-height ratio per rectangle is

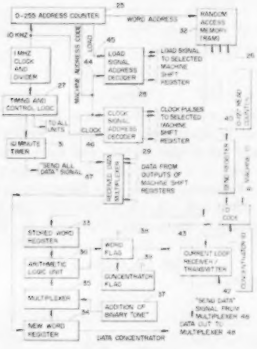
equal to the width-to-height ratio of the photosensitive surface of the camera tube used for parallel scanning of the symbols, and the width-to-height ratio of the total surface area to be read on the carrier is converted to the width-to-height ratio of the photosensitive surface of the camera tube by means of an image convertor comprising a plurality of glass fiber bundles, the number and shape of which correspond with the number and shape of the rectangles to be read on the carrier, which glass fiber bundles are bent together such that the end face has a width-to-height ratio corresponding with the width-to-height ratio of the photosensitive surface of the camera tube, and characterized in that the entire surface area of a form to be scanned is scanned in one cycle after the image conversion by means of a television camera producing series pulses, that the image comprising an even plurality of rectangles formed by the image convertor is vertically scanned by p image lines of one field of the selected type while ignoring the other field, that the alternate rectangles are scanned by the alternate fractions of an image line of this one field and the intermediate rectangles are scanned by the intermediate fractions of the next image line of this one field, and that the number of vertical image elements (q) (image points) per image line is selected substantially equal to the number of effective image lines ($p/2$) and the information detected by an image line in an effective rectangle is converted into numerical values by means of an encoding device, which numerical values are formed by the encoded values of the numbers of the detected characteristic image elements (image points) in the columns (image lines) and of the characteristic columns, and which numerical values obtained in an effective rectangle are transferred to a transfer device in the period of time immediately following the scanning of that rectangle.

3,858,181

MONITORING SYSTEM

Arthur F. Goldsby, Morrison; Satish K. Anand, Denver, and Frank J. Haberl, Golden, all of Colo., assignors to Martin Marietta Corporation, Rockville, Md.

Filed Oct. 17, 1973, Ser. No. 407,388
Int. Cl. H04q *9/00*
U.S. Cl. 340—150 **7 Claims**



1. A system for monitoring a plurality of machines having widely spaced locations comprising:

a plurality of binary sensors connected to each machine;

a plurality of local data storage and processing units, each corresponding to a separate group of machines and connected to every machine in that group;

means to sequentially feed binary information from sensors in each machine of a group to said local data storage and processing unit corresponding to that group;

comparison means in said local data storage and processing unit for comparing received sensor information with previous information received from the same sensor and determining and indicating the existence of a change;

a central processing unit;

scanning means for scanning said local data storage and processing units and retrieving from them only changed information; and

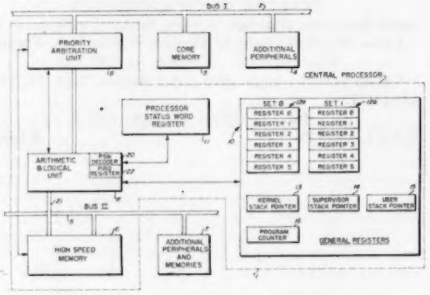
transmission means for transmitting said changed information to said central processing unit.

3,858,182

COMPUTER PROGRAM PROTECTION MEANS

Bruce A. Delagi, Acton; David L. Stone, Framingham; David Cutler, Acton, and Robert C. Gray, Cambridge, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 10, 1972, Ser. No. 296,027
Int. Cl. G06f *13/00*
U.S. Cl. 340—172.5 **6 Claims**



1. A data processing system comprising:

A. a memory unit for storing sequences of instructions and data as programs, each program being classified in one of a predetermined number of operating modes, the memory unit also storing a processor status word corresponding to each program to identify the operating mode of that program, and

B. a processor unit including:

i. a group of registers identified by operand addresses in instructions, said group including a number of sets of general registers which is less than the predetermined number of operating modes, a register corresponding to each mode operable as a stack pointer, and a single register operable as a program counter,

ii. a processor status word register for receiving a processor status wored corresponding to a program being processed each time said processor unit begins to process a program,

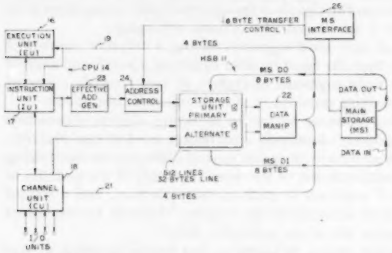
iii. a processor status word decoder including a first means for decoding a first portion of the processor status word to identify the current operating mode and the corresponding stack pointer register, and

iv. means responsive to an operand address and signals from said first decoding means identifying the current operating mode and the stack pointer for addressing a selected one of said registers, each program thereby using a set of general registers, a stack pointer corresponding to the operating mode and the program counter.

3,858,183
DATA PROCESSING SYSTEM AND METHOD THEREFOR

Gene M. Amdahl, Saratoga, and Richard J. Tobias, Palo Alto, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Oct. 30, 1972, Ser. No. 302,229
Int. Cl. G06f *3/00, 13/00*
U.S. Cl. 340—172.5 **17 Claims**

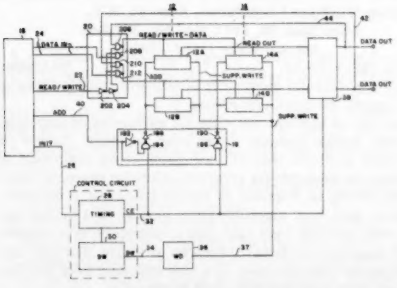


1. In a data processing system having a central processing unit (CPU), a main storage (MS) and a high-speed buffer storage (HSB) coupling said CPU to said MS, said MS being coupled to said HSB by parallel line connection means which will accommodate a predetermined plurality of bytes for data out of and into said MS, said HSB comprising: a plurality of primary storage units for storing said predetermined plurality of bytes, each of said storage units corresponding to a predetermined one of said bytes, gating means for bundling the data outputs of selected nonsequential pairs of said storage units, coupling means for separately coupling the data outputs of said selected nonsequential pairs of said storage units to said MS to move said predetermined plurality of bytes into said MS, means for enabling only one of said storage units of each of said pairs of said storage units at any one time, word register means (WR) for coupling said gating means to said CPU, said WR storing a number of bytes corresponding to the number of said nonsequential pairs, said number of bytes being a fraction of said predetermined plurality of bytes.

3,858,184
AUTOMATIC NON-INTERRUPTING REFRESH TECHNIQUE

Hubert G. DeVries, Littleton, Colo., assignor to Monolithic Systems Corporation, Engelwood, Colo.

Filed Jan. 22, 1973, Ser. No. 325,688
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 DR **10 Claims**

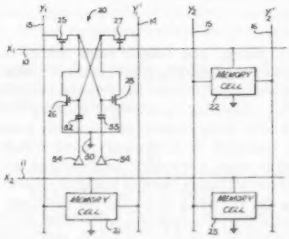


1. A semiconductor memory array comprising a plurality of memory cells arrayed in rows and columns, each of said memory cells having the characteristic of storage decay over a decay period, each of said memory cells including a read/write line and an address line, each said cell having said storage decay refreshed by application of a write pulse to said cell, means for supplying address pulses to said array, each of said address pulses-initiating a read/write cycle, and logic control means responsive to said address pulse for supplying a supplemental write pulse after each read pulse to said memory array prior to the end of each said decay period associated with each said read pulse.

3,858,185
MOS DYNAMIC MEMORY ARRAY & REFRESHING SYSTEM

John A. Reed, Los Altos, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed July 18, 1973, Ser. No. 380,347
Int. Cl. G11c *11/40, 11/24*
U.S. Cl. 340—173 DR **2 Claims**



1. In a dynamic memory wherein a plurality of memory cells are simultaneously refreshed, said memory being operative to an enable signal for enabling communications of data with said memory and a refresh signal for controlling the refreshing of said plurality of memory cells, a system for refreshing said plurality of cells wherein said refresh signal and said enable signal are asynchronous comprising:

logic circuit means for generating a refresh abort signal in the event said enable signal is applied to said memory while said plurality of cells are being refreshed; and

a refresh pulse generator for generating a refresh pulse of a predetermined width for refreshing said plurality of memory cells upon receipt of said refresh signal, said generator including

a. means for aborting generation of said refresh pulse upon generation of said refresh abort signal,

b. means for generating said refresh pulse after the termination of said refresh abort signal provided said refresh signal is present and said generator has generated a refresh pulse of less than said predetermined width prior to the last generation of said refresh abort signal, and,

c. means for preventing generation of said refresh pulse in the event said refresh signal is received by said generator during said communications of data with said memory,

whereby said enable signal and refresh signal may be independent.

3,858,186

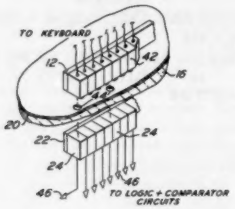
METHOD AND APPARATUS FOR QUALIFYING IDENTIFICATION MEANS USING LASER GENERATED INFORMATION STORAGE AND RETRIEVAL APPARATUS

Ronald C. Barker, c/o Applied Laser Technology, Inc., 40 Westland Rd., Weston, Mass. 02193

Continuation-in-part of Ser. No. 149,277, June 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 870,186, July 10, 1969, abandoned. This application Aug. 31, 1973, Ser. No. 393,354

Int. Cl. G11c *11/42*, *13/04*

U.S. Cl. 340—173 LM 11 Claims



1. Data storage and qualification apparatus, comprising laser means for generating both coherent radiation and continuous wave radiation, said laser means comprising an array of lasers for generating a plurality of selected sources of radiation, each laser being capable of selectively generating pulsed coherent radiation or continuous wave radiation having a lower power value, a memory, said memory including a substrate and an occluding layer of material on said substrate for occluding the radiation generated by said array of lasers, an array of transducers responsive to the continuous wave radiation generated by said array of lasers, said transducers being positioned to detect continuous wave radiation incident on the surface of the substrate of the memory, said memory being intermediately positioned on an optical axis extending from said array of lasers to said array of transducers, means for focusing said coherent radiation on said occluding layer whereby portions of said layer are removed when said lasers are operated in a pulsed, coherent mode, removed portions of said layer defining stored information, means for scanning said memory relative to the array of lasers and transducers, and means responsive to the output of said transducers to read the stored information in said memory.

3,858,187

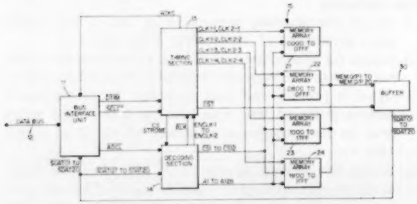
READ ONLY MEMORY SYSTEM

John T. Lighthall, and Harry A. Toy, both of Brockville, Ontario, Canada, assignors to GTE Automatic Electric (Canada) Ltd., Brockville, Ontario, Canada

Filed Jan. 11, 1974, Ser. No. 432,621

Int. Cl. G11c *7/00*, *17/00*

U.S. Cl. 340—173 R 6 Claims



1. A memory system having stored therein a plurality of words, each word having a fixed number of bits, comprising:

an array of memory elements, each memory element having the capacity for storing a quantity of word segments, each memory element having address input connections for selectively addressing each word segment of said quantity as determined by signals thereto, a number of output connections equal to the number of bits of a word segment, and a memory element select connection for enabling the memory element in response to a signal applied thereto, each memory element being operable in response to a signal at the memory element select connection to permit the bits of the word segment addressed by the signals at the address input connections to be read out at the output connections in parallel;

each of said word segments having a different number of bits than the fixed number of bits of a word, and each of the word segments of certain of said memory elements containing portions of at least two different words;

address receiving means for receiving address information selectively identifying a particular word of said plurality, said address information having a first portion designating a particular one of the word segments of the quantity of word segments in each memory element, and a second portion designating the memory elements having stored therein bits of the particular word;

decoding means including a first means coupled to said address receiving means and to the address input connections of all the memory elements of the array for applying signals to the address input connections to address the particular word segment of each of the memory elements as designated by the first portion of the address information;

said decoding means including a second means coupled to said address receiving means and to the memory element select connections of the memory elements of the array for applying signals to the memory element select connections of only the memory elements containing bits of the particular word as designated by the second portion of the address information, whereby said certain of said memory elements containing portions of different words in the same word segments receive a signal at the memory element select connection if designated by the second portion of the address information as containing bits of the particular word; and output gating means coupled to the output connections of said certain of said memory elements and to said second means of said decoding means for permitting bits read out of one of said certain memory elements which are a portion of the particular word to pass therethrough and for preventing bits of the same word segment which are not a portion of the particular word from passing therethrough.

3,858,188

MULTIPHASE MAGNETIC BUBBLE DOMAIN DECODER

George E. Keefe, Montrose, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1972, Ser. No. 267,842

Int. Cl. G11c *11/14*, *19/00*

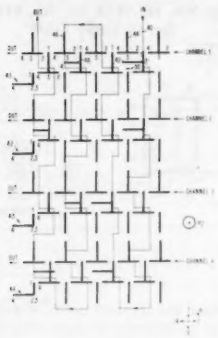
U.S. Cl. 340—174 TF 10 Claims

1. An apparatus for movement of magnetic bubble domains in a magnetic medium, comprising:

a plurality of propagation paths for movement of said magnetic bubble domains from input positions thereof to output positions thereof, said paths being comprised of magnetic elements for creating successive magnetic poles therealong in response to reorientations of a magnetic drive field, said magnetic poles moving said bubble domains, wherein each said path is comprised of a number of magnetic elements sufficient to insure that said domains will always move to a new magnetic pole location each time said magnetic field reorients,

magnetic field means for producing said reorienting magnetic field, the orientations of said magnetic field being produced in repetitive sequences for movement of said domains in synchronism in each said channel,

decoder means for detouring domains at a plurality of locations along each said propagation path as said domains move along each said propagation path, said decoder



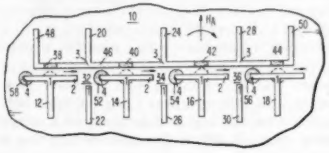
means including means for effecting said detours along each said path at different orientations of said magnetic field.

3,858,189

MAGNETO RESISTIVE SIGNAL MULTIPLIER FOR SENSING MAGNETIC BUBBLE DOMAINS

William F. Beausoleil, Hopewell Junction; George E. Keefe, Montrose, and Ernest L. Walker, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,408
Int. Cl. C11c *19/00*; **G11c** *11/14*
U.S. Cl. 340—174 EB **7 Claims**



1. A circuit for sensing magnetic bubble domains including a magnetic medium capable of supporting single wall magnetic bubble domains, propagation means located on the magnetic medium and defining a plurality of bubble idler positions connected in a series string by a plurality of propagation means disposed between adjacent idler positions, comprising:

a. a plurality of magneto-resistive sensing elements disposed adjacent the magnetic medium;

b. each sensing element lying adjacent a propagation means disposed between adjacent idler positions; and

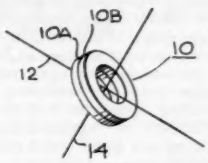
c. means connecting the magneto-resistive sensing elements in series, whereby when magnetic bubble domains located at each idler position are caused to move to the next adjacent idler position in a given direction each such bubble produces a resistance change in an adjacent sensing element.

3,858,190

MULTI-BIT CORE READ OUT SYSTEM

Arthur L. Friedman, Studio City, Calif., assignor to Electronic Memories & Magnetics Corporation, Los Angeles, Calif.

Filed June 18, 1973, Ser. No. 371,286
Int. Cl. G11c *11/06, 27/00*
U.S. Cl. 340—174 ZB **6 Claims**



1. In a multi-bit storage core system of the type wherein each core has a plurality of binary bit storage layers of different coercirity and stores one of a range of binary numbers as different combinations, of binary bits of information, means for reading the binary number stored in a core comprising:

means for driving all the storage layers of said core substantially simultaneously to produce an analog signal having an amplitude representative of the binary number within said range of binary numbers stored in said core,

an analog-to-digital converter, and

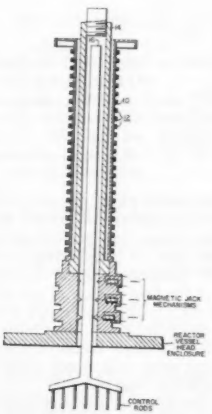
means for applying said analog signal to said analog-to-digital converter to generate the binary number stored in said multi-bit storage core.

3,858,191

DIGITAL MULTIPLEXED POSITION INDICATION AND TRANSMISSION SYSTEM

James A. Neuner, Gibsonia; Francis T. Thompson, Murrysville, and Leonard C. Vercellotti, Verona, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 3, 1973, Ser. No. 320,792
Int. Cl. G08b *23/00*; **G08c** *19/06*
U.S. Cl. 340—188 R **18 Claims**



1. A digital position indication system for displaying the relative position of a movable elen: .nt with respect to fixed known coordinates comprising:

sensory means responsive to the element's position to provide discrete electric outputs indicative thereof at corresponding output terminals;

an encoder electrically connected to said sensory means an operable upon said discrete outputs to provide a digital coded output represenative of the element's position;

signal transfer means electrically coupled to said encoder output and controlled by a corresponding command address signal to transmit said digital coded output;

signal retrieval means for generating, sequencing and transmitting said corresponding command address signal to said signal transfer means to effect transmission of said digital coded output to said retrieval means, said retrieval means being operable to process said digital coded encoder output into a display signal output;

fault detection means for monitoring said digital coded encoder output representative of the element's position for a malfunction and responsive to electrical malfunctions effecting said digital coded encoder output representative of the element's position to generate a separate digital coded encoder output identifying the malfunction and transmit the same to said signal retrieval means in place of the digital coded output associated with the malfunction in response to said address corresponding to said digital coded encoder output associated with the malfunction; and

display means responsive to said display signal from said retrieval means to provide a corresponding visual display.

3,858,192

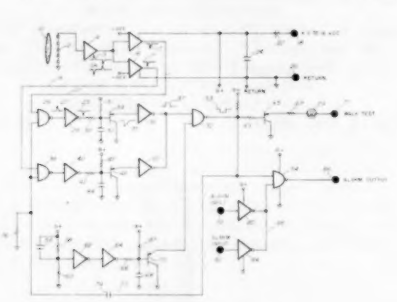
INTRUSION DETECTOR ALARM SYSTEM HAVING LOGIC CIRCUITRY FOR INHIBITING FALSE ALARMS

Lawrence E. Fischer, Bridgeport, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Dec. 26, 1972, Ser. No. 317,981

Int. Cl. G08b *13/18*

U.S. Cl. 340—258 R **2 Claims**



1. Intrusion detector logic circuitry for producing an output alarm signal on a predetermined input signal sequence from a detector array comprising, in combination,

a. a passive detector array having a predetermined field of view for producing a signal sequence when an intruder moves in the field of view of said detector array,

b. means for applying said signal sequence to one of the inputs of a pair of dual input retriggerable one-shot circuits having a single output at which an alarm signal is generated when said signal sequence occurs within a predetermined time interval,

c. gating means having first and second inputs and an output, said single output of said pair of retriggerable one-shot circuits coupled to said first input of said gating means for passing an alarm signal to said output thereof, and

d. feedback means coupled between the output of said gating means to the other inputs of said dual input retriggerable one-shot circuits for retriggering said one-shot circuits to assure an alarm signal at the output of said gating means of predetermined duration regardless of the time difference in the input signal sequence as long as the sequence occurs within a predetermined time interval.

3,858,193

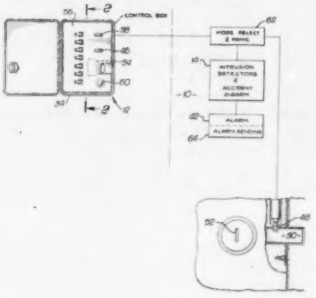
ELECTRONIC INTRUSION ALARM SYSTEM

Loyal Morton Bach, 12608 Bendito Dr., San Diego, Calif. 92128

Filed Nov. 16, 1973, Ser. No. 416,363

Int. Cl. G08b *13/08*

U.S. Cl. 340—274 **17 Claims**



1. A system for transmitting an alarm to a monitoring station to signal intrusion or attempted intrusion into a locked space, said system including:

a. a main lock mechanism for permitting access to said space by authorized personnel;

b. an auxiliary lock for preventing opening of said main lock mechanism;

c. a set of intrusion detectors;

d. an alarm transmitter;

e. arming means for placing said intrusion detectors in condition to operate said alarm transmitter;

f. auxiliary lock releasing means for permitting said main lock mechanism to be opened by authorized personnel;

g. a control mechanism both for said arming means and for said auxiliary lock releasing means, said control mechanism being accessible exteriorly of said locked space for first and final access respectively upon entering and leaving said locked space, said control mechanism including operating means having two mutually exclusive modes corresponding respectively to operation of said arming means and operation of said auxiliary lock releasing means; said arming means being operable only in one of said two modes, and said auxiliary lock releasing means being operably only in the other of said two modes; and

h. lock means for controlling access to said control mechanism.

3,858,194

SECURITY SYSTEM WITH MEANS FOR SUBSCRIBER CONTROL

Leo Jedynak, Madison, Wis., and Paul A. Bert, Crystal Lake, Ill., assignors to Oak Industries, Inc., Crystal Lake, Ill.

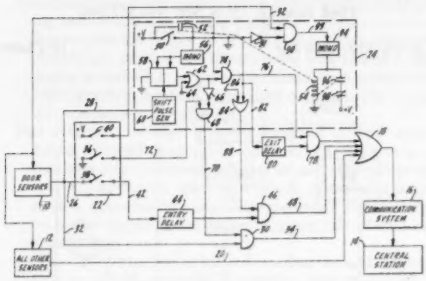
Continuation-in-part of Ser. No. 304,143, Nov. 6, 1972, , which is a continuation-in-part of Ser. No. 126,590, March 22, 1971,. This application Oct. 4, 1973, Ser. No. 403,415

Int. Cl. G08b *13/00*

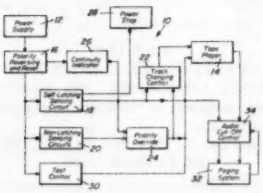
U.S. Cl. 340—276 **5 Claims**

1. A security alarm system including detection means located at an installation to be protected, a central station, a communications link between said detection means and central station, a plurality of time delay means at the installation to be protected connected in circuit between said detection means and central station, each of said time delay means being arranged for use during a different period of the day, said time

delay means preventing transmission of an alarm signal from said detection means to said central station for a predetermined period after initiation thereof, and a time clock, at the installation to be protected, for controlling operation of said time delay means.

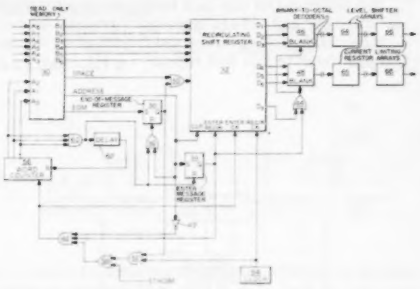


3,858,195
AUDIO ALARM SYSTEM
Joseph Gregg, Jr., Johnston, and John Paul Hannigan, Carrolltown, both of Pa., assignors to Jab Company, Inc.
Filed Aug. 28, 1973, Ser. No. 392,325
Int. Cl. H04m *11/02*
U.S. Cl. 340—311 **14 Claims**



1. In combination with a record player having a player head displaceable relative to a plurality of tracks on a record medium from which different messages are reproduced, a plurality of sensors, a source of voltage, at least one self-latching circuit connected to said source of voltage for generating an intermittent player operating signal in response to actuation of one of the sensors, non-latching circuits connected to said source of voltage for generating continuous player operating signals in response to actuation of the other of the sensors, means for transmitting said signals to the record player to select the track at which the player head is positioned, interlock means for disabling the non-latching circuits in response to said intermittent player operating signal, reset means connected to said source of voltage for resetting the self-latching circuit in response to reversal in polarity of the source of voltage, and indicating means connected to said self-latching circuit for monitoring continuity thereof in response to said reversal in polarity.

3,858,196
DISPLAY SYSTEM EMPLOYING DIGITALLY-ADDRESSABLE CRT
Joseph D. Vrabel, Concord, and Edwin H. Hilborn, Framingham, both of Mass., assignors to The United States of America as represented by the Secretary of the Department of Transportion, Washington, D.C.
Filed Sept. 27, 1973, Ser. No. 401,294
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 A **13 Claims**



1. A display system comprising:

a cathode ray display tube, said tube having a plurality of cathodes each preaimed at a shadow mask associated with each cathode, each mask defining indicia which is enlarged by the tube electron optics to cover the entire display screen when its associated cathode is energized;

means for sequentially receiving and storing information commensurate with portions of a desired display; and

means for sequentially addressing the individual cathodes of the display tube in accordance with said stored information whereby indicia commensurate with the portions of the display are sequentially projected on the cathode ray tube display screen and the entire display will be visible due to the retention characteristics of the cathode ray tube screen.

3,858,197
DEVICE FOR CONTROLLING DISPLAY OUTPUT BY MICRO-PROGRAM
Mitsuo Shimizu, Yokohama, and Ichiro Sado, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 2, 1972, Ser. No. 303,013
Claims priority, application Japan, Nov. 10, 1971, 46-89560
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 R **4 Claims**

1. A display control device for a numeric display unit comprising:

a shift register (**15**) having input and output terminals for storing a binary coded numeric information from the input terminals;

the numeric display unit (**13**) having a plurality of digit segments and a plurality of numeric segments in each of said digit segments for displaying the information stored in said shift register;

a digit segment drive circuit ($13A_D$) connected to said digit segments of said numeric display unit for selectively energizing said digit segments, said digit segment drive circuit including a first decoder for decoding a plurality of binary codes entered and for selecting one of said digit segments;

a numeric segment drive circuit ($13K_D$) for selectively energizing said plurality of numeric segments associated with each of said digit segments, said numeric segment drive circuit including a second decoder for decoding a plurality of binary codes entered and for selecting some or all of said numeric segments;

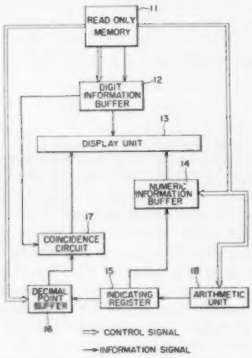
a digit information buffer circuit (12_1) having output terminals connected to the input terminals of said digit segment drive circuit;

a first group of AND gates (12_1) having output terminals connected to the input terminals of said digit information buffer circuit and each having two input terminals;

a numeric information buffer circuit (14_4) having output terminals connected to the input terminals of said numeric segment drive circuit;

a second group of AND gates (14_3) having output terminals connected to the input terminals of said numeric information buffer circuit and each having two input terminals;

an arithmetic unit (18) having output terminals for executing an arithmetic operation and for delivering the operational result to said shift register;



a read-only memory (11) composed of a semi-conductor large scale integration circuit having at least a data portion including digit position information stored and a control portion including gate control signal stored therein;

means for controlling said first group of AND gates to deliver a digit position information signal to said digit information buffer circuit in response to an application of the digit position information from said data position of said read-only memory to one set of said input terminals thereof as well as an application of the gate control signal from said control portion of said read-only memory to the other set of said input terminals thereof;

means for controlling said second group of AND gates to deliver a binary numeric information signal to said numeric information buffer circuit in response to an application of one digit numeric information from said shift register to one set of input terminals thereof as well as an application of the gate control signal from said control portion of said read-only memory to the other set of input terminals thereof;

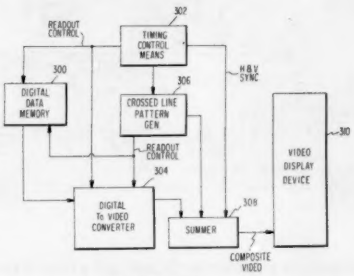
means for controlling said numeric display unit so that said plurality of digit segments are sequentially energized in accordance with the sequence of the digit information stored in said read-only memory and said numeric segments are selectively energized to display the numeric information stored in said shift register in accordance with the gate control signal included in said read-only memory, thereby to display plural digits of numerics on a time division basis.

3,858,198

FIXED FORMAT VIDEO DATA DISPLAY EMPLOYING CROSSED-LINE PATTERN FORMAT DELINEATION

Walter Lee Ross, Simi, Calif., assignor to RCA Corporation, New York, N.Y.

Filed June 22, 1973, Ser. No. 372,646
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 AD **10 Claims**



DISPLAY SYSTEM

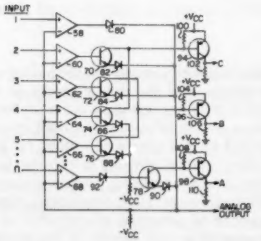
1. In a raster-scan data display system incorporating storage means, and readout means coupled to said storage means for use in electronically repetitively generating successive raster-scanned fields displaying stored game-score or other similar data of a given kind of game on a video-signal display device while the game is progressing, said readout means causing said score data to be displayed in a standardized fixed format of said display device in which any of separate given portions of said data is compartmentalized within its own individual area of said display; the improvement wherein said readout means includes time-controlled means independent of said storage means and any of said data for generating as part of said successive raster-scanned fields a pattern of crossed lines having predetermined locations with respect to each other which delineate each of said individual areas of said standardized fixed format.

3,858,199

TRACKING LEVEL DETECTOR

James A. Neuner, Gibsonia, Pa., and Maurizio Traversi, Torino, Italy, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 3, 1973, Ser. No. 320,778
Int. Cl. H03k *13/00*
U.S. Cl. 340—347 AD **1 Claim**



1. A tracking detector comprising means for comparing the level of *n* analog electrical inputs, where *n* is an integer from one to infinity, and responsive to one of said *n* inputs having an extreme analog value of predetermined sign at any given point in time as compared to the remaining *n* - 1 inputs to provide an analog output electrically buffered from and equal to said one input having the extreme value including:

n operational amplifiers having a first non-inverting input and a second inverting input and an output, each of said inverting inputs being connected in parallel to said analog output and each of said non-inverting inputs being connected to corresponding ones of said *n* inputs;

n diodes respectively connected in series with corresponding ones of said *n* operational amplifier outputs in a direction to pass the output in accordance with the predetermined sign, each of said diodes being wire OR-ed to said analog output so as to form a feedback loop between the corresponding inverting inputs and outputs of the respective operational amplifiers;

bias reference voltage means connected at said analog output having a predetermined floating voltage value to bias said n operational amplifiers to pass said one of said n inputs having the extreme value to said analog output so as to accommodate high common mode input voltages on said *n* inputs in the order of magnitude of said bias voltage; and

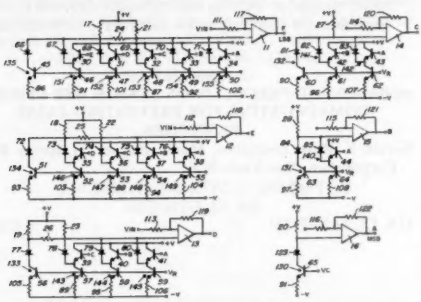
an encoder electrically connected as a part of said feedback loop to said *n* operational amplifiers and responsive to said one of said *n* inputs having the extreme analog value to provide a digital coded output corresponding thereto having *x* bits where 2^x equals *n*.

3,858,200

VARIABLE THRESHOLD FLASH ENCODER ANALOG-TO-DIGITAL CONVERTER

Tim Warren Henry, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 29, 1973, Ser. No. 327,334
Int. Cl. H03k *13/00*
U.S. Cl. 340—347 AD **12 Claims**



1. An analog-to-digital converter having input means for receiving an input analog voltage to be converted to a digital representation of *n* bits wherein a first voltage level is designated a binary "1" and a second voltage level is designated a binary "0," comprising:

a. *n* comparator means, each having an input terminal connected to the input means, a threshold terminal for receiving a voltage threshold and an output terminal for providing either a binary "1" or a binary "0," determined by the relative amplitudes of the analog input voltage and the voltage threshold establishing a "1" or "0" state of the comparator means;

b. *n* threshold voltage circuit means, each connected to the threshold terminal of a corresponding one of the *n* comparator means for providing a voltage threshold to the respective threshold terminal;

c. at least one varying circuit means for varying at least one of the voltage thresholds;

d. at least one switching circuit means, operatively connected to the output terminal of one of the *n* comparator means, responsive to the state of the comparator means, for connecting the varying circuit means to the threshold voltage circuit means connected to the threshold terminal of another of the n comparator means to vary the voltage threshold if the switching circuit means are activated; and

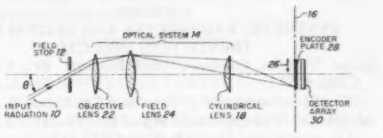
e. said *n* comparator means being responsive to the applied analog input signal for asynchronously generating binary information at said plurality of *n* comparator output terminals in accordance with the delay time of said *n* comparator means.

3,858,201

HIGH ANGULAR RESOLUTION SENSOR

Leigh Curtis Foster, Atherton, Calif., assignor to Itek Corporation, Lexington, Mass.

Filed Oct. 15, 1973, Ser. No. 406,716
Int. Cl. H03k *13/18*; **G08c** *9/06*
U.S. Cl. 340—347 P **9 Claims**



1. A system for detecting the direction from which incident radiation is received from over a given field of view, and comprising:

a. a cylindrical optical system for gathering radiation from the relatively wide field of view and for directing the radiation back to a focal plane as a sharp line image with the position of the line image in said focal plane being dependent upon the direction from which the radiation is received;

b. encoder means positioned substantially at said focal plane, said encoder means having a plurality of code tracks for selectively passing radiation in dependence upon the position of said line image relative to said code tracks;

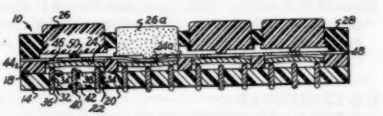
c. a plurality of detectors, at least one for each said code track, for detecting nonfocused radiation selectively passed by said code tracks, whereby said plurality of detectors will not be damaged by focused radiation and whereby the outputs of said plurality of detectors are representative of the position of said line image relative to said encoder means which in turn defines the direction from which the incident radiation is received.

3,858,202

PUSHBUTTON KEYBOARD SYSTEM

Henry J. Boulanger, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 148,503, June 1, 1971, Pat. No. 3,725,907. This application Apr. 2, 1973, Ser. No. 347,026. The portion of the term of this patent subsequent to Apr. 10, 1990, has been disclaimed.
Int. Cl. H04g *3/00*
U.S. Cl. 340—365 R **3 Claims**



1. In a selectively energizable keyboard system comprising an electrically insulating support member having a surface on which a plurality of conductive paths are disposed arranged in a preselected pattern adapted to transmit electrical information in response to selective interconnection of portions of said paths; a plurality of spaced apart generally U-shaped

conductive members arranged in a preselected configuration on said support member in electrical communication with preselected portions of said paths, means for selectively establishing electrical connection for the conduction of electrical current between certain of said paths including a plurality of selectively actuable conductive elements, and means mounting said conductive elements adjacent but spaced from a surface of said support member, at least one of said conductive members being disposed adjacent each of said conductive elements, said conductive elements each being adapted for selective deflection into engagement with its said at least one conductive member in response to the application of a preselected deflecting force to said conductive element, thereby selectively to establish paths for the flow of electrical current between selected portions of said path.

3,858,203

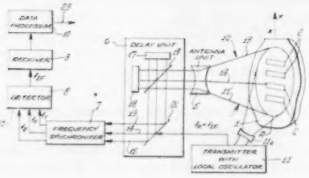
SYNTHETIC RADIOMETER AND SYSTEM FOR IDENTIFYING OBJECTS

James Nickolas Constant, 1603 Danbury Dr., Claremont, Calif. 90711

Continuation-in-part of Ser. No. 52,665, July 6, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 288,049

Int. Cl. G01s *9/56*; **G01p** *3/36*

U.S. Cl. 343—6.5 SS **20 Claims**



1. In a synthetic radiometer having an antenna unit for receiving radiation from an object of interest, a detector for a radiation beam from the antenna unit, a receiver for signals from the detector, and a data processor for signals from the receiver, the improvement comprising:

a delay unit inserted between the antenna unit and the detector, said delay unit including means for separating incoming radiation from said antenna unit into at least two beams along different paths, and means for recombining the outgoing radiation to said detector into a single beam, with the paths of different length providing a delay in one separated beam relative to the other and providing a modulated beam at the detector for a radiating object moving through the field of the optical unit.

3,858,204

CLOSED LOOP GAIN CONTROL TUNNEL-DIODE BASE BAND OBJECT DETECTOR

Kenneth W. Robbins, Wilmington, and Gerald F. Ross, Lexington, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed July 19, 1973, Ser. No. 380,628

Int. Cl. G01s *7/28*, *9/02*; **H04b** *1/16*

U.S. Cl. 343—7 ED **9 Claims**

1. Base band signal selector means comprising:

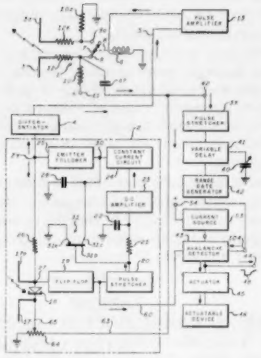
wide band transmission line receiver means for propagating base band pulse signals in the TEM transmission line mode substantially without distortion thereof,

tunnel diode means having first and second terminal means coupled across said wide band transmission line means and responsive to said propagating base band pulse signals by a substantial change of conductivity state,

pulse shaping circuit means coupled to aid first terminal means,

integrator means responsive to said pulse shaping circuit means,

constant current circuit means responsive to said integrator means for charging capacitor means,



discharge circuit means responsive to said pulse shaping means for discharging said capacitor means, and

circuit means for coupling said capacitor means to said first terminal for supplying a saw tooth wave form thereto.

3,858,205

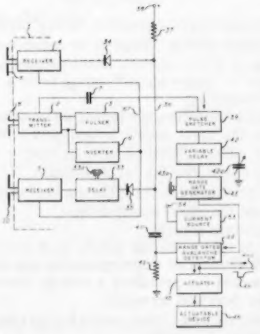
BASE-BAND PRECOLLISION SENSOR WITH TIME DOMAIN GATING FOR PREVENTING FALSE RESPONSES

Gerald F. Ross, Lexington, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 6, 1972, Ser. No. 295,648

Int. Cl. G01s *9/04*

U.S. Cl. 343—7 ED **3 Claims**



1. Vehicle borne protective precollision apparatus comprising:

transmitter means for radiating base-band electromagnetic pulses into a region of space in a portion of which a collision with an object will probably occur,

first and second receiver means symmetrically disposed with respect to said transmitter means for receiving base-band electromagnetic pulses reflected from said object when in said region of space,

AND circuit means responsive to substantially simultaneous pulse outputs of said first and second receiver means and providing a pulse response only when said object is in a limited azimuth sector of said portion,

gate circuit means synchronously responsive to said transmitter means and responsive to said AND circuit means for producing a pulse output only when said object is in a limited range zone of said limited azimuth sector of said portion spaced from said transmitter means, and

utilization means responsive to said gate circuit

means including:

actuator means, and

means actuatable by said actuator means,

said AND circuit means including:

first and second diode means respectively coupling said first and second receiver means to a common junction, source means coupled to said common junction for supplying electrical bias to said first and second diode means, and

impedance means for coupling said common junction to said gate circuit means.

3,858,206

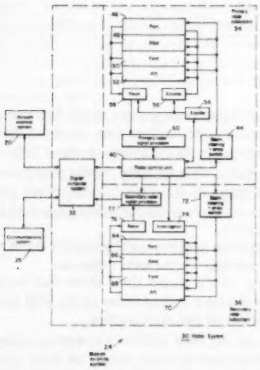
METHOD AND MEANS FOR OPERATING AN AIRBORNE SWITCHED ARRAY RADAR SYSTEM

Stuart P. Scheidler, Anaheim; Gerald M. Goldberg, Chatsworth; Richard Sidlo, Placentia; Donald L. King, La Mirada, and Richard A. Gebhardt, Orange, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 5, 1973, Ser. No. 329,765

Int. Cl. G01s *9/02*

U.S. Cl. 343—7 A **12 Claims**



1. In an airborne radar system including a plurality of fixed beam steered antenna structures mounted in an aircraft, each directed at different sectors within a 360° azimuth volume, control means carried by said aircraft for energizing said antenna structures, said control means comprising:

digital logic means for producing digital signals constituting a radar control command comprised of various information fields respectively specifying (1) an azimuth position within said azimuth volume and (2) either a track or search beam mode, said digital logic means producing successive radar control commands each specifying said search beam mode and successive azimuth positions within said azimuth volume, and said digital logic means further producing radar control commands each specifying said track beam mode and an azimuth position within said azimuth volume;

said digital logic means further including priority means for determining the priorities of the radar control commands to be next produced by said search command means and said track command means;

means for enabling either said search command means or said track command means dependent on the relative value of said priorities to issue an active radar control command; and

transmitter means responsive to said active radar control command for supplying signal energy characteristic of the specified mode to the antenna structure corresponding to the specified azimuth sector.

3,858,207

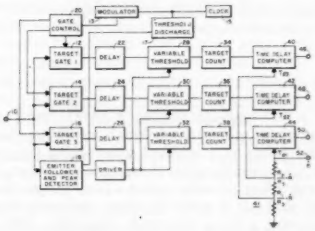
RANGE SENSING TARGET DETECTING DEVICE

Bennie D. Macomber, Norco, and Noel D. Gravelle, Riverside, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 29, 1966, Ser. No. 583,497

Int. Cl. F42c *13/04*

U.S. Cl. 343—7 PF **5 Claims**



1. In a guided missile range sensing target detecting device, the combination comprising:

a. a plurlity of target gate circuits for receiving video signals reflected from a target,

b. target gate control means coupled to said plurality of target gate circuits for controlling the time interval each gate is open,

c. peak detector circuit means having an input for receiving and producing an output proportional to the amplitude of the reflected video signals,

d. delay filter circuit means coupled to each of said target gate circuits for attenuating signals which have a pulse width less than a predetermined value,

e. variable threshold circuit means coupled to each of said delay filter circuit means for passing only the video signals received from said delay filter circuit means when they exceed the output signal from said peak detector circuit,

f. target count circuit means coupled to each of said variable threshold circuit means for producing an output pulse in response to a predetermined number of video pulses received from said variable threshold circuit means within a predetermined time interval,

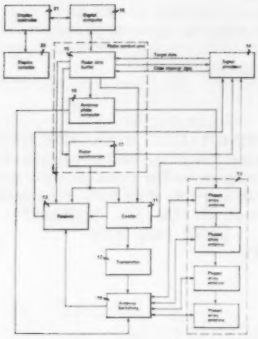
g. a plurality of computer circuit means each having a first input coupled to the output of a target count circuit means and having a second input for receiving a voltge proportional to missile to target closing velocity for producing an output firing pulse in response to the presence of a pulse from said target count circuit.

3,858,208

AUTOMATIC PRF SELECTION TO OPTIMIZE RANGE AND DOPPLER VISIBILITY IN RADAR TRACKING

Donald P. Parke, Anaheim; Willis M. Priester, Garden Grove; Stuart P. Scheidler, Anaheim, and Gerald M. Goldberg, Placentia, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 5, 1973, Ser. No. 329,763
Int. Cl. G01s 9/10
U.S. Cl. 343—7.5 **12 Claims**



1. In a moving-target-indication (MTI) radar system for tracking targets, said system having a transmitter for transmitting radar pulses at a selected transmitting frequency, F, a receiver for receiving radar return signals, and a signal processor for cancelling all radar return signals except those having a doppler shift due to a moving target, apparatus for automatically selecting a pulse repetition frequency, PRF, within a given range of PRF's for optimum range and doppler visibility, comprising

computer means for selecting said transmitting frequency,

computer means for finding a band of PRF's between velocity blind regions in said range of PRF's, where a velocity blind region is a small band of PRF's centered on a PRF which happens to be the same as the doppler frequency of the target being tracked, or a multiple thereof,

computer means for finding a particular PRF within said band of PRF's which does not have a range blind zone spanning the predicted range of a target being tracked, and

radar synchronizing means for timing transmission of radar pulses at said particular PRF by said transmitter, each pulse consisting of electromagnetic energy at said transmitting frequency.

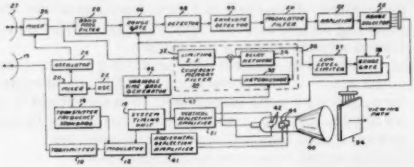
3,858,209

RADAR MOVING TARGET TRACKING SYSTEM

Donald I. Zulch, Oneida, N.Y., assignor to The United States of America as represented by the Secretary of the United States Air Force.

Filed July 27, 1962, Ser. No. 214,173
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **8 Claims**

1. in a radar moving target indicator system having a transmitter periodically radiating pulses of high frequency radiant energy and a receiver receiving reflections of the energy by an intercepted target and converting said reflections into corresponding video signals, each target when experiencing uncoordinated attitude flight manifesting such instability by uncontrolled tumbling which is evidenced by



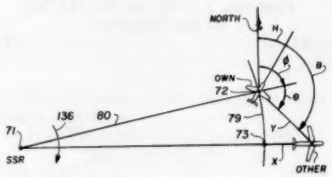
amplitude modulation characteristics of said video signals, means in said receiver for extracting the amplitude modulation component of video signals resulting from a tumbling target, and display means using the extracted amplitude modulation component for indicating the rate of tumbling.

3,858,210

PROXIMITY INDICATION WITH RANGE AND BEARING MEASUREMENTS

George B. Litchford, Northport, N.Y., assignor to Litchstreet Co., Northport, N.Y.

Division of Ser. No. 180,578, Sept. 15, 1971, Pat. No. 3,757,324. This application June 20, 1973, Ser. No. 371,883
Int. Cl. G01s 9/56, 9/02
U.S. Cl. 343—11 R **8 Claims**



1. A method of determining slant range Y between an own and another transponder station that are in different directions from a secondary surveillance radar (SSR) such that they are interrogated successively as the main beam of the radar sweeps by them in succession, comprising the steps of:

a. receiving the other's transponder replies at the own transponder station,

b. establishing from said replies the other's dwell time as the SSR beam sweeps by the other station,

c. establishing own's dwell time from the interrogations received by the own transponder as the SSR beam sweeps by the position of the own station,

d. producing at the own station a common azimuth sector signal in response to occurrence of both of said dwell times within an interval that corresponds to the width of a predetermined common azimuth sector from the SSR,

e. producing a range command signal in response to said common azimuth sector signal whereby replies of transponders occurring outside said common azimuth sector are ignored,

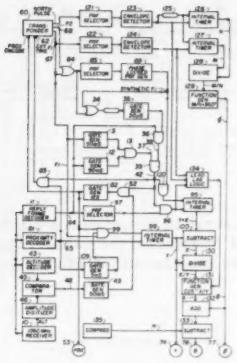
f. transmitting said range command signal from said own station to said other transponder, and

g. measuring and producing at the own station a quantitative representation Y of the time interval between said range command transmission and the reply received from the other's transponder in response thereto.

3,858,211
PROXIMITY INDICATION WITH RANGE AND BEARING MEASUREMENTS

George B. Litchford, Northport, N.Y., assignor to Litchstreet Co., Northport, N.Y.

Division of Ser. No. 180,578, Sept. 15, 1971, Pat. No. 3,757,324. This application June 20, 1973, Ser. No. 371,839
Int. Cl. G01s 9/56
U.S. Cl. 343—16 R 6 Claims



1. A method of determining at an own transponder station the bearing angle ϕ of said own station from a selected secondary surveillance radar (SSR) that omniazimuthally transmits a reference signal as the main radar beam sweeps through a standardized reference direction, such as magnetic North, said method comprising the steps of:

a. receiving said reference signals,

b. receiving interrogation signals from said radar as the main beam sweeps by the own location,

c. measuring the time interval between successive reception of one of said reference and said interrogation signals and producing a quantitative first representation of the main beam rotation inverval,

d. measuring and producing a quantitative second representation of the time interval between reception of a reference signal and reception of the next subsequently received interrogation signal,

e. dividing the value of said second representation by that of said first representation to produce the quotient of said values, and

f. producing a quantitative representation ϕ of said quotient.

3,858,212
MULTI-PURPOSE INFORMATION GATHERING AND DISTRIBUTION SYSTEM

Leo L. Tompkins, 127 Wacaster St., Jackson, Miss. 39210, and J. Willis Hughes, 306 Glenway Dr., Jackson, Miss. 39216

Filed Aug. 29, 1972, Ser. No. 284,516
Int. Cl. G01s 1/02
U.S. Cl. 343—100 CS 16 Claims

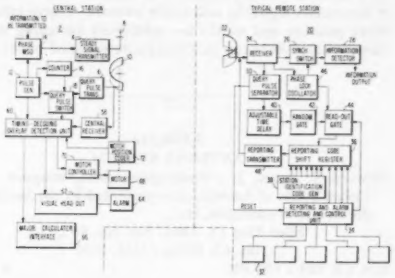
1. A multipurpose communications system for communicating between a central station and a plurality of remote stations, said system comprising:

a. first transmitter means at said central station for transmitting information to said remote stations, said transmitter means including:

1. steady signal transmitter means for transmitting a steady information signal to all of said remote stations;

2. omni-directional antenna means for radiating said steady information signal to all said remote stations;

3. query signal transmitter means for transmitting query signals to said remote stations during very short predetemined interruptions in said steady information signal; and



4. directional antenna means for radiating said query signals to at least one of said remote stations at a time;

b. first receiver means at said central station for receiving data signals from said remote stations;

c. second receiver means at each of said remote stations for receiving said steady information signals and said query signals from said first transmitter means;

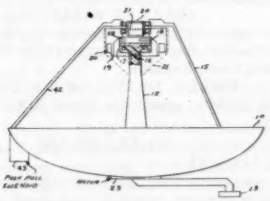
d. sensor means at each of said remote stations for sensing various conditions at said remote stations; and

e. second transmitter means at each of said remote stations for transmitting to said first receiver means at said central station data signals indicative of the conditions sensed by said sensor means in response to said query signals.

3,858,213
ANTENNA WITH SHORT LINE TUNING STUB

Jacob Tellier; Henry G. Burnett, both of Dallas, Tex., and Thomas S. Lewis, Charlottesville, Va., assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Oct. 18, 1965, Ser. No. 497,571
Int. Cl. H04b 7/00
U.S. Cl. 343—100 PE 4 Claims



1. In an antenna, for providing lobing on receive on track only for a radio-frequency signal with a predetermined polar-

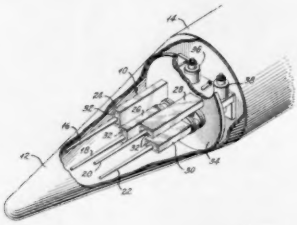
ization, having a reflector; a center feed; means for supporting said center feed in front of said reflector; a transmit splash plate on the end of said center feed; a serrated receive ring surrounding said transmit splash plate; a trislot TR tube mounted on said center feed in energy receiving relation to said receiving ring; said trislot transmit-receive tube having a circular window on the side thereof remote from said transmitter splash plate; means adjacent said circular window of said trislot transmit-receive tube, adapted to be switched between two predetermined angular positions, for presenting a short at the trislot tube input to said radio-frequency signal in one position and for presenting an open circuit at the trislot tube input, to said radio-frequency signal to effect modulation of the receive signal by said trislot transmit-receive tube in the other position and means for selectively switching said last named means between said two predetermined positions.

3,858,214

ANTENNA SYSTEM

Howard S. Jones, Jr., Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 18, 1966, Ser. No. 552,376
Int. Cl. H01q *15/24, 9/30*
U.S. Cl. 343—100 PE **8 Claims**



1. An antenna system comprising a pair of dielectric rod radiators positioned in parallel end fire array, the center-to-center spacing of said rods being no greater than 4½ inches, and a pair of parallel waveguides, said rods being mounted in and projecting from the ends of said waveguides.

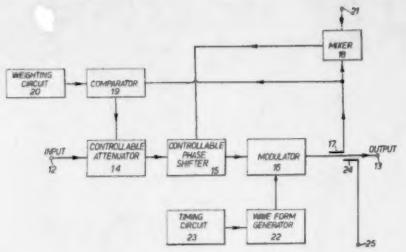
3,858,215

MICROWAVE TRANSMISSION EMPLOYING TIME STAGGERED FREQUENCY MODULATION AT AN ARRAY OF RADIATORS

William Francis Miller, and Edward Marshall Wells, both of Great Baddow, England, assignors to The Marconi Company Limited, Essex, England

Filed Oct. 10, 1972, Ser. No. 295,971
Claims priority, application Great Britain, Oct. 8, 1971, 46993/71
Int. Cl. G01s *1/08*
U.S. Cl. 343—102 **19 Claims**

1. A microwave transmission arrangement including a plurality of microwave radiators in a linear array, means for applying microwave carrier signals which are substantially in phase to the plurality of microwave radiators, means for frequency modulating with similar periodic modulations the microwave carrier signal applied to each of the said microwave radiators, and means for delaying the application of the frequency modulation to each microwave radiator by a predetermined amount relative to the application of the frequency modulation to an adjacent microwave radiator, whereby the interference pattern set up in space by the radiations of different frequencies emitted by the radiators are in the form of a line spectrum of frequencies, the different frequencies of which are radiated simultaneously in different predetermined directions.

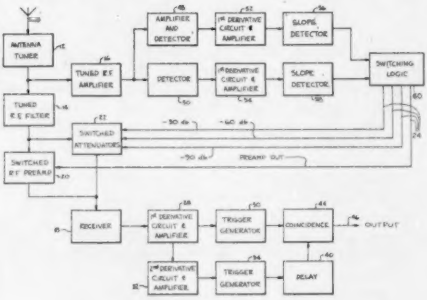


3,858,216

METHOD AND APPARATUS FOR LORAN RECEPTION

Wayne E. DeVaul, 2055 N.W. 25th St., Corvallis, Oreg. 97330

Filed Feb. 4, 1972, Ser. No. 223,652
Int. Cl. G01s *1/24*
U.S. Cl. 343—103 **24 Claims**



1. In a hyperbolic navigation system for deriving position information from at least a pair of received signals transmitted from separated locations,

receiver means for detecting received signal envelopes and for developing an output indicative of the timing of predetermined received envelopes,

means for determining the amplitude of a received signal,

and means for adjusting the effective amplitude of the same received signal in response to said determination so that said amplitude falls within predetermined limits from which said receiver means can develop output information based upon the wave shape of said envelope,

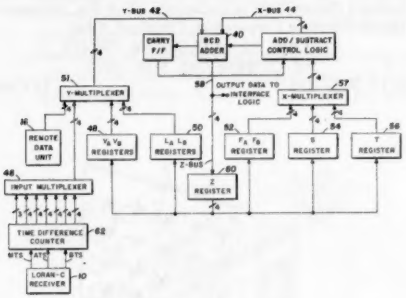
said means for adjusting the effective amplitude comprising attenuator means selectively responsive to the determination of said signal amplitude for adjusting the same.

3,858,217

LORAN ASSIST DEVICE

Ronald G. Roll, Silver Spring; Charles R. Edwards; Robert C. Moore, both of Laurel; George D. Wagner, Clarksville, and Ronald K. Burek, Beltsville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1974, Ser. No. 435,080
Int. Cl. G01s 1/20
U.S. Cl. 343—103 R 4 Claims



1. In a hyperbolic navigation system including a receiver, for receiving signals transmitted by master and slave stations and for producing therefrom unique tracking strobe signals, and a programmable calculator capable when supplied with filtered time difference measurements of said tracking strobe signals of manipulating said measurements in accordance with predetermined navigation equations to produce navigational data, the improvement comprising an interface means for operably connecting said receiver and said programmable calculator, said interface means comprising:

read-only memory means for storing and outputting data enabling signals according to a predetermined sequence, means responsive to the signals from said memory means and being connected to receive said unique tracking strobe signals from said receiver for producing therefrom a plurality of timing difference signals defining a measure of the time differences between said tracking strobe signals,

binary adder means having a first plurality of inputs, a second plurality of inputs, and a plurality of outputs representing the sum of said first and second pluralities of inputs,

single register means connected to receive said plurality of output signals from said adder means and producing a plurality of output signals therefrom,

a first plurality of shift register means responsive to the signals stored in said memory means, each of said first plurality of shift register means having inputs connected to receive said output signals of said single register means and each having a plurality of outputs connected to said first plurality of inputs of said adder means, and

a second plurality of shift register means responsive to the signals stored in said memory means, each of said second plurality of shift register means having imputs connected to receive said output signals of said single register means and each having a plurality of outputs connected to said second plurality of inputs of said adder means,

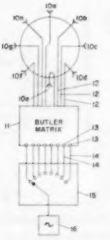
said programmable calculator having data input terminals connected to said plurality of outputs of said adder means.

3,858,218

ANTENNA SYSTEM FOR RADIATING DOPPLER CODED PATTERN, USING SEQUENTIAL MODAL EXCITATION

Raymond J. Masak, and Herbert F. Baurle, both of East Northport, N.Y., assignors to Hazeltine Corporation, Greenlawn, N.Y.

Filed Apr. 3, 1973, Ser. No. 347,504
Int. Cl. G01s 1/38
U.S. Cl. 343—106 D 7 Claims



1. An antenna system for radiating wave energy into a desired region of space during a selected time period and in a desired radiation pattern, wherein the frequency of said radiated energy within said region of space varies with a component of angular direction from said antenna system measured in a selected plane, comprising:

an array of antenna element columns, arranged along a circular arc lying in said plane, for radiating supplied wave energy signals, said columns comprising one or more antenna elements and means for coupling supplied wave energy signals to said elements;

means for supplying a sequence of pulse type wave energy signals to each of said columns simultaneously during said time period, the phase difference between pairs of corresponding signals in the sequences supplied to any two adjacent columns being equal to a different integral multiple of the angular separation of said columns for each of said pairs;

thereby causing said antenna system to radiate said desired radiation pattern.

3,858,219

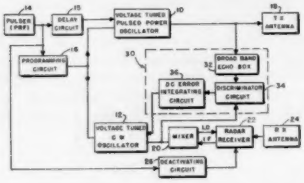
FREQUENCY DIVERSITY RADAR

Joseph F. Hull, Redwood City, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 10, 1955, Ser. No. 539,705
Int. Cl. G01s 7/28, 7/36
U.S. Cl. 343—17.2 R 8 Claims

1. A frequency diversity radar system comprising a source of pulses of recurring frequency, a source of relatively high power radio-frequency energy periodically energized into oscillations by said recurring pulses and adapted to be voltage tuned over a relatively wide range of frequencies, an antenna responsive to the output of said pulsed oscillations, a source of relatively low power continuous-wave radio-frequency energy adapted to be voltage tuned over said range of frequencies, means responsive to said recurring pulses for voltage tuning said radio-frequency energy sources whereby the respective frequency-outputs therefrom an instantaneously and simultaneously shifted to successive discrete frequencies by

successive recurring pulses, means coupled between said sources whereby the output frequency of said low power source is maintained constant for the duration between a pair of successive recurring pulses at the frequency of said high power source due to the first of said successive pair of pulses, a radar receiver adapted to receive echo signals and including



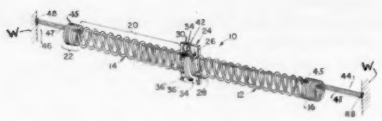
local oscillator means for converting said received signals to a prescribed intermediate frequency, and means for heterodyning the successive frequency outputs from said low power source and said intermediate frequency whereby there is produced the local oscillator frequency to convert said received signals to said intermediate frequency.

3,858,220

TUNABLE SPIRAL DIPOLE ANTENNA

Sidney Arnow, 11 Columbine Ln., Kings Park, N.Y. 11754

Filed Nov. 12, 1973, Ser. No. 414,892
Int. Cl. H01q *1/36*
U.S. Cl. 343—802 **11 Claims**



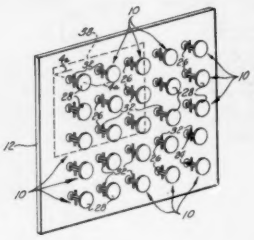
1. A dipole antenna capable of being adjustably tuned for a given frequency comprising, dipole arms formed of a pair of helical coils whose diameter is small compared to the wave length of the frequency being tuned and whose length can be adjustably expanded, common feed point means electrically connected to said coils for supplying current to the dipole arms, and supporting means for supporting the antenna such that said coils extend outwardly from said common feed point means, said coils being composed of flat spring wire formed into helical turns, each coil being adjustable to expand the pitch between the turns of one section of the coil to form a section of expanded turns and to contract the pitch between the turns of another section of the coil to form a section of contracted turns the number of turns in the expanded sections providing proper tuning of the antenna at the given frequency for the adjusted length of the coils.

3,858,221

LIMITED SCAN ANTENNA ARRAY

Jimmy L. Harrison, Melbourne; David F. Lehman, and Harry Richard Phelan, both of Indialantic, all of Fla., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Apr. 12, 1973, Ser. No. 350,412
Int. Cl. H01q *1/48, 3/26, 21/12*
U.S. C. 343—815 **12 Claims**



1. A planar phase-steerable antenna array having gain and comprising a plurality of element antennas arranged generally in a plane with the element antennas being uniformly spaced apart from each other in directions parallel to said plane by a distance in a range from approximately 0.75 to 1.10 wavelength and having terminals, electronic beam-steering means for controlling the direction of a main beam of said array over a range of ± 15° from an array mechanical axis, said beam steering means comprising phase-controlled excitation means connected to the terminals of the element antennas for exciting the element antennas with power, said element antennas each comprising a partial reflector and a main reflector substantially larger than the partial reflector, with all of the partial reflectors being located in a common plane and all of the main reflectors being located in a second common plane, means for conducting the power from said terminals along a path from the main reflector toward the partial reflector, and electromagnetic radiation means interposed between the main and partial reflectors and connected to receive power from the conduction means for producing electromagnetic waves between the main and partial reflectors.

3,858,222

TAPE PROGRAMMER FOR TIME RECORDERS

Vernon T. Kleimeyer, Cincinnati, Ohio, assignor to General Signal Corporation, New York, N.Y.

Filed Sept. 19, 1973, Ser. No. 398,689
Int. Cl. G07c *1/00;* **H01h** *43/08*
U.S. Cl. 346—17 **9 Claims**

1. In a time recorder of the type including a printing mechanism, a drive motor for said printing mechanism, the novel feature which comprises:

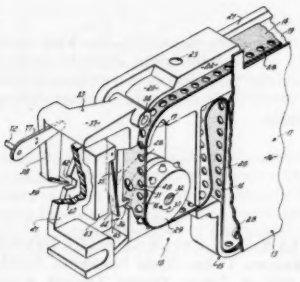
a programmer for providing electrical control signals for controlling electrically operable devices at predetermined times, said programmer comprising:

a continuous loop of tape for receiving timing holes at predetermined locations along its length;

tape drive means connected between said motor and said continuous loop of tape for intermittently advancing said continuous loop of tape to present said predetermined locations to a detector position at predetermined time intervals of a first duration;

a timing hole detector at said detector position movable relative to said tape for mechanically detecting the presence or absence of timing holes, said timing hole detector providing an electrical control signal when a timing hole is detected;

a first means in operable contact with said timing hole detector for periodically restraining said detector in spaced relationship from said tape and preventing



movement of said timing hole detector toward said tape to thereby prevent detecting the presence or absence of timing holes on said continuous loop of tape except during predetermined time intervals of a second duration, said time intervals of said second duration being substantially shorter than the time intervals of said first duration;

a second means in operable contact with said timing hole detector for preventing movement of said timing hole detector toward said tape to thereby prevent detecting the presence or absence of said timing holes except during predetermined time subintervals of a substantially less duration than the duration of the time intervals, said time subintervals occurring more frequently than said predetermined time intervals of said second duration;

said timing hole detector being operative to detect the presence of timing holes only at times corresponding to the coincidence of said predetermined time intervals and said time subintervals.

3,858,223

DEVICE FOR PHOTOGRAPHIC MONITORING OF ROAD INTERSECTIONS CONTROLLED BY A TRAFFIC LIGHT

Jurgen Holzapfel, Neuss, Germany, assignor to Robot Foto und Electronic GmbH & Co. KG, Dusseldorf-Benrath, Germany

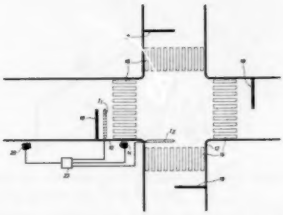
Filed Jan. 24, 1974, Ser. No. 436,036

Claims priority, application Germany, Feb. 14, 1973, 2307217

Int. Cl. G08g *1/10*

U.S. Cl. 346—107 VP **8 Claims**

1. An improvement for an apparatus for photographically monitoring an intersection of two roads, at which there is a traffic light, by making photographs of vehicles entering the intersection against the stop signal of the traffic light, said apparatus including a first sensor positioned along one of the roads to produce a signal when a vehicle passes the first sensor, a first device to produce a first camera-actuating pulse in response to said signal for taking an initial photograph, and a second device to produce a second camera-actuating pulse a predetermined delay time after said initial photograph for



taking a second photograph, said improvement comprising:

a second sensor positioned along the other of the two roads to produce a signal when a vehicle passes the second sensor; and

means connected to said second sensor and to said apparatus for producing a camera-actuating pulse when a signal from the second sensor occurs within said given period of time after the signal from the first sensor.

3,858,224

EXPOSURE CONTROL DEVICE FOR A PHOTOGRAPHIC CAMERA

Paul R. Heaney, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,182

Int. Cl. G03b *7/08, 9/02*

U.S. Cl. 354—42 **4 Claims**

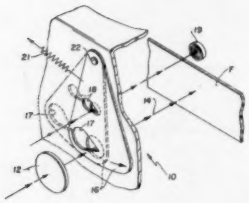
1. In a camera having a film exposure plane and having a photosensitive element with a parameter which varies between a first level and a second level as a function of the amount of light impinging on said element, the improvement comprising:

a. an apertured light-regulating member movable along a path between (1) a normal rest position in which scene light is blocked from said film exposure plane and said photosensitive element and (2) a maximum apertured light-unblocking position in which scene light can be directed toward said exposure plane while a proportional amount of light can be directed onto said photosensitive element;

b. spring means for creating a bias force urging said light-regulating member toward said normal rest position;

c. a galvanometer having a movable coil coupled to said light-regulating member, said coil being responsive to an electrical signal and being effective to apply to said light-

regulating member a drive force proportional to the energy content of such a signal in opposition to said bias force, said galvanometer and said spring means being located with respect to said light-regulating member to effect movement of said member from said rest position toward said maximum apertured light-unblocking position when an electrical signal is applied to said coil; and d. circuit means, including said photosensitive element,



for providing to said galvanometer a time-invariant electrical signal when said parameter is at its first level, to thereby effect continuous relatively rapid movement of said light-regulating member, said circuit means further including means for periodically interrupting said time-invariant signal to produce a pulsed signal when said parameter is at its second level, to thereby effect intermittent movement of said light-regulating member.

3,858,225

INTERCHANGE LENS ATTACHMENT FOR SINGLE LENS REFLEX CAMERA

Goro Hasegawa, Tokyo, and Masaharu Ito, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

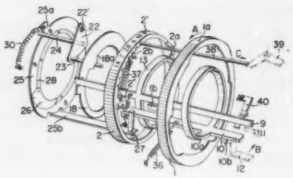
Continuation of Ser. No. 98,550, Dec. 16, 1970, abandoned. This application Dec. 20, 1972, Ser. No. 317,353

Claims priority, application Japan, Dec. 19, 1969, 44-120477; Dec. 19, 1969, 44-120478; Feb. 16, 1970, 45-15011; Feb. 14, 1970, 45-14410; Jan. 12, 1970, 45-3381

Int. Cl. G03b *7/00*

U.S. Cl. 354—46 **14 Claims**

1. An interchangeable lens attachment for use with a single lens reflex camera having a shutter and exposure measuring means as well as for use with a single lens reflex camera having a shutter and an electric exposure control, comprising mounting means for mounting the attachment to a camera, diaphragm means movable from an open position through intermediate positions to a closed position, biasing means connected to said diaphragm means for biasing the diaphragm means towards its closed position, shutter responsive means coupleable to the shutter of a camera for holding said diaphragm means in the open position and releasing said diaphragm means for movement through intermediate positions toward the closed position in response to operation of the shutter, diaphragm stopping means movable into various positions in the path of the movement of said diaphragm means to stop the movement of said diaphragm means in a given position after said diaphragm means has been released to move toward the closed position, and setting means coupled to said stopping means for imparting the movement of said stopping



means to the exposure measuring means when the attachment is mounted on a camera having exposure measuring means and for receiving movement from the exposure control means when the attachment is mounted on a camera having exposure control means.

3,858,226

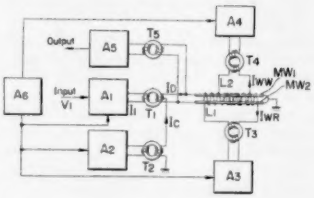
EXPOSURE VALUE STORAGE DEVICE

Shiro Nakagawa, Chiba; Soichi Nakamoto; Yoshiyuki Takishima, both of Tokyo; Tetsuya Taguchi, Kawasaki, and Masamichi Kakunodate, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha and TDK Electronics Co., Ltd., both of Tokyo, Japan

Filed June 5, 1973, Ser. No. 367,222

Int. Cl. G03b *7/08*

U.S. Cl. 354—60 **6 Claims**



1. An exposure control device comprising light-receiving means for receiving light from an object being photographed and converting it into an electrical signal, a magnetic wire element selectively and electrically coupled with the light-receiving means and applied with a drive current corresponding to the output therefrom, first exciting means for applying a d.c. magnetic field of a varying level to the wire element in the direction in which the current is applied, current detecting means electrically connected across the current path through the wire element, second exciting means for applying a d.c. magnetic field of a varying level to the wire element in the direction in which the current is applied, and control signal generating circuit, said generating circuit being operable, during photometry of light from the object being photographed, to apply the output of the light-receiving means to

the wire element and to excite the first exciting means, and being operable, during control of an exposure, to produce sequentially signals which operate the current detecting means and the second exciting means to their active states, whereby luminance of the object being photographed is stored magnetically in the wire element during photometry and an electrical signal corresponding to the stored value is produced during exposure.

3,858,227

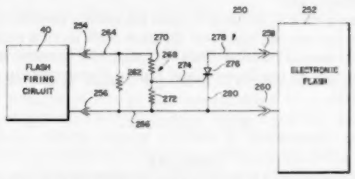
ADAPTER APPARATUS FOR FLASH FIRING SYSTEM

Seymour Ellin, and Richard C. Kee, both of Chestnut Hill, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 246,706, April 24, 1972,. This application Feb. 5, 1973, Ser. No. 329,371

Int. Cl. G03b *15/02*

U.S. Cl. 354—145 **20 Claims**



1. Apparatus for use with a camera having a photographic exposure control system of a variety operative when selectively activated to ignite a replaceable flashlamp exhibiting a predetermined impedance characteristic when so ignited, said system including means responsive to said exhibited impedance characteristic for performing an operational function, comprising:

a support;

electrical input terminal means on said support;

electrical output terminal means on said support;

means connected to said support for attaching said apparatus to the camera with its said electrical input terminal means in electrical communication with the camera's photographic exposure control system;

means formed on said support for mounting another source of artificial illumination, not exhibiting said predetermined impedance characteristic when ignited, in electrical communication with said output terminal means;

switching means connected between said electrical input and output terminal means and responsive to said selective activation for effecting the energization of the other source of artificial illumination; and

impedance means connected to said electrical input terminal means, said impedance means being selected so that said apparatus exhibits said predetermined impedance characteristic to said electrical input terminal means when the other source of illumination is energized responsive to said selective activation.

3,858,228

GYROSCOPIC HOLDER FOR CAMERA

Kunimasa Mito, 527 Minaminakameru, Omiya-shi, Japan

Filed Oct. 4, 1973, Ser. No. 403,613

Int. Cl. G03b *17/56*

U.S. Cl. 354—293 **6 Claims**

1. A gyroscope holder for a camera comprising:

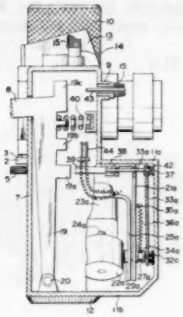
a mounting base for a camera and means for detachably fixing a camera thereon;

a casing containing a gyroscope mounted on pivots around which its rotary shaft can move angularly;

means for operating said gyroscope;

handles provided on both sides of said mounting base; and

means associated with one of said handles for first activating said means for operating said gyroscope and then releasing the shutter of a camera fixed to said mounting base, wherein said means for releasing the shutter of the camera fixed to the mounting base is an operation member biased to a rest position by spring means, provided with an operation button, and movable to a position in



which the shutter is released after said means for operating the gyroscope is activated,

and further comprising means for braking the rotation of the gyroscope when said operation member is situated in the rest position.

3,858,229

APPARATUS FOR WET TREATMENT OF PHOTOSENSITIVE MATERIAL

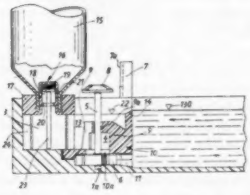
Emile Frans Stievenart, Antwerp, Belgium, and Jurgen Muller, Munich, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 17, 1973, Ser. No. 351,954

Claims priority, application Germany, Apr. 19, 1972, 2219110

Int. Cl. G03d *13/02*

U.S. Cl. 354—331 **14 Claims**



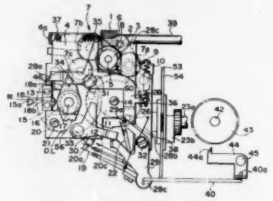
1. In an apparatus for wet treatment of photographic prints, films or analogous sheet-like commodities, a combination comprising a first liquid-containing vessel having an upper edge and a second liquid-containing vessel smaller than said first vessel and located at one side of the latter, the commodities to be treated being transported through said first vessel with resulting removal of liquid therefrom; refilling means arranged to automatically discharge liquid into said second vessel when the liquid in said second vessel descends below a predetermined level; a weir forming an elongated partition between said vessels and including overflow means located below the level of said upper edge of said first liquid-containing vessel; and pump means operable to convey liquid from said second vessel directly into said first vessel whereby the liquid overflows through said overflow means of said weir and reenters said second vessel in response to continuing operation of said pump after said first vessel is filled with liquid.

3,858,230

TRICK PHOTOGRAPHING DEVICE FOR MOTOR DRIVEN MOTION PICTURE CAMERAS

Yukio Miki, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed Sept. 29, 1972, Ser. No. 293,569
Claims priority, application Japan, Oct. 13, 1971, 46-93709
Int. Cl. G03b 21/36
U.S. Cl. 352—91 S 6 Claims



1. A trick photographing device for a motor driven motion picture camera comprising:

a reversible electric motor;

a motor circuit including a battery power source for applying a voltage fed in different polarities therefrom, the motor circuit further including a change-over switch having a first position for applying the voltage of one polarity to the motor and transporting a film in a forward direction, and a second position for applying the voltage of the other polarity to the motor and transporting the film in a reverse direction;

an on-off switch openable for interrupting the voltage supply through said change-over switch of said second position;

a time setting means having a first notched gear rotatably mounted on a shaft and comprising a toothed portion and an arcuate spaced portion formed by a notched portion for opening said on-off switch, a second notched gear rotatably supported on said shaft, and a connecting member for transmitting rotation in one direction of said first notched gear to said second notched gear;

a shutter open angle operating member rotatable in association with the rotation of the second notched gear;

a clutch member having first and second associated gears driven from said motor and rotatable in opposite directions and movable between a first position where the first associated gear is engageable with said first notched gear, and a second position where the second associated gear is engageable with said second notched gear;

a first member for releasing a film winding shaft from a stop position and movable between a first position for locking said on-off switch in an open condition and a second position for releasing the on-off switch from the locked open condition and stopping the film winding shaft;

a manually operable member for switching the camera between a normal photographing position, an overlapping photographing position and a fading photographing position;

a second member held in a position retracted from said second notched gear and adapted to place said change-over switch in said first position when said manually operable member is in said normal photographing position, the second member engaging with said second notched gear for stopping the notched portion thereof and switching said change-over switch from said first position over to said second position when the manually operable member is held in said overlapping photographing position or fading photographing position;

a third member for holding said member in the first position thereof when said manually operable member is in the fading photographing position and for releasing said first member from the first position when the manually operable member is in the normal photographing position or the overlapping photographing position;

a fourth member movable between a first position for holding the first member in the first position thereof and actuating said clutch member for rendering the second associated gear engageable with said second notched gear when said manually operable member is in the normal photographing position, and a second position for releasing said first member from said first position thereof and actuating said clutch member for rendering said first associated gear engageable with said first notched gear when said manually operable member is in the overlapping photographing position or fading photographing position;

a stop member movable between a first position for holding said fourth member in its first position and a second position for releasing said fourth member from being held in its first position and permitting it to move to its second position; and

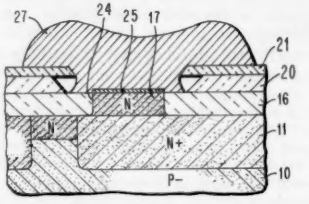
changing means, secured to said manually operable member, for moving said stop member from its first position to its second position when said manually operable member is in its overlapping and fading photographing positions.

3,858,231

DIELECTRICALLY ISOLATED SCHOTTKY BARRIER STRUCTURE AND METHOD OF FORMING THE SAME

Ingrid E. Magdo, and Steven Magdo, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,399
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 357—15 6 Claims



1. A planar integrated circuit structure comprising:

a silicon substrate having isolating regions of oxidized silicon extending from a surface of said substrate into the substrate and surrounding pockets of silicon, said oxidized silicon regions and silicon pockets being substantially coplanar at said surface,

a layer of dielectric material formed on said surface,

at least one opening extending through said dielectric layer to a coincident silicon pocket having a maximum conductivity-determining impurity C_0 of 10^{18} atoms/cm^3, said opening having larger lateral dimensions than said pocket so as to expose the entire surface of said silicon pocket and a portion of the oxidized silicon region surrounding said pocket, and

a metallic layer in said opening forming a Schottky Barrier contact with the entire surface of said exposed silicon pocket, said metallic layer also overlapping the exposed portion of the oxidized silicon region surrounding said pocket.

3,858,232

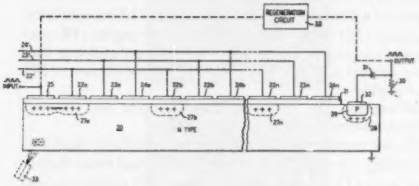
INFORMATION STORAGE DEVICES

Willard Sterling Boyle, Summit, and George Elwood Smith, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Continuation-in-part of Ser. No. 11,541, Feb. 16, 1970, abandoned. This application Nov. 9, 1971, Ser. No. 196,933

Int. Cl. H01l *11/14*

U.S. Cl. 357—24 32 Claims



1. In a charge transfer apparatus of the type for storage and serial transfer of charge carriers localized in a plurality of induced potential energy minima along a portion of a semiconductor charge storage medium by sequentially applying different potentials to successive portions of the surface of the medium through a plurality of electrodes, the invention characterized in that the charge storage medium is of a single conductivity type.

3,858,233

LIGHT-RECEIVING SEMICONDUCTOR DEVICE

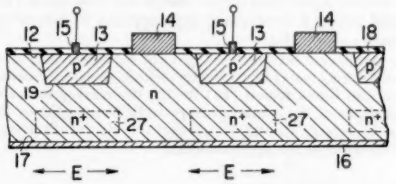
Kenzi Miyata, and Tatsuya Kamei, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 1, 1973, Ser. No. 328,732

Claims priority, application Japan, Feb. 2, 1972, 47-11381

Int. Cl. H01l *15/02*

U.S. Cl. 357—30 18 Claims



1. A light receiving semiconductor device comprising a semiconductor substrate of *n*-type conductivity including a plurality of light receiving elements each having at least first and second semiconductor regions of opposite conductivity type forming at least one p-n junction therebetween, said light receiving elements being arranged in a certain spaced relationship with each other, each of said light receiving elements having its light receiving face exposed to one of the surfaces of said semiconductor substrate and the edge of said at least one *p-n* junction being exposed thereto;

an *n*-type region of a higher impurity concentration than said semiconductor substrate, said *n*-type region being formed in said semiconductor substrate at least a portion of which is disposed beneath the surface of each of said light receiving elements which is directly opposite to that respective surface portion by way of which light enters; and

a couple of electrodes each in ohmic contact with a respective one of said first and second regions of each of said light receiving elements.

3,858,234

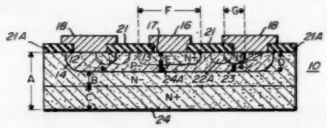
TRANSISTOR HAVING IMPROVED SAFE OPERATING AREA

Richard O. Olson, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 8, 1973, Ser. No. 321,880

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—34 9 Claims



1. A transistor comprising an emitter of one type conductivity, a base of the opposite conductivity type having a bottom and a collector of the same conductivity type as the emitter, the emitter being surrounded by the base and forming a junction therewith, said emitter and said base having contact surfaces lying in the same plane, ohmic contact metallizations formed on each of said emitter and base, an isolation layer extending over the base emitter junction between said ohmic contact metallizations and a current blocking region surrounding said emitter, of like conductivity type thereto, extending into said base toward its bottom, and forming a pinch resistance between said current blocking region and the bottom of said base, in the path of current flow in said base between said base contact metallization and said emitter.

3,858,235

PLANAR FOUR-LAYER-DIODE HAVING A LATERAL ARRANGEMENT OF ONE OF TWO PARTIAL TRANSISTORS

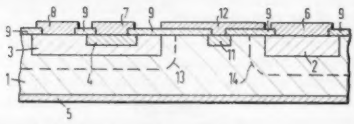
Juergen Schild, Ebersberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 267,425, June 29, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 397,712

Claims priority, application Germany, July 5, 1971, 2133430

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—35 6 Claims



1. A planar four-layer-diode having a lateral arrangement of first and second regions forming a partial transistor which includes a substrate of one conductivity type and laterally spaced first and second regions of opposite conductivity type forming pn junctions with said substrate, an insulating layer above said substrate, a metal electrode formed on said insulating layer above that portion of said substrate between the pn junctions only of said lateral partial transistor, and metal electrode being conductively connected with said substrate.

3,858,236
FOUR LAYER CONTROLLABLE SEMICONDUCTOR RECTIFIER WITH IMPROVED FIRING PROPAGATION SPEED

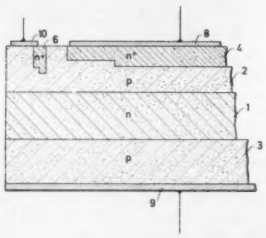
Horst Schafer, Zirndorf, and Lothar Herbing, Nurnberg, both of Germany, assignors to Semikron Gesellschaft fur Gleichrichterbau und Elektronik mbH, Nurnberg, Germany

Filed Mar. 8, 1973, Ser. No. 339,045

Claims priority, application Germany, Mar. 8, 1972, 2211116

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—38 **5 Claims**



1. In a controllable semiconductor rectifier device including: a monocrystalline semiconductor body having four layer-type zones of alternatingly opposite conductivity types and with the one of the inner zones of said semiconductor body which borders on the one of the outer zones of said semiconductor body which serves as the emitter zone of the device having a portion thereof which is to support the control electrode and extends to the same major surface of said semiconductor body as said emitter zone; a respective load current electrode ohmically contacting each of the two outer zones of said semiconductor body; and a control electrode ohmically contacting said one of the inner zones, the improvement comprising:

a highly doped zone of a conductivity type opposite that of said one of the inner zones formed within said portion of said one of the inner zones and laterally spaced from said emitter zone, said highly doped zone forming a pn-junction with said one of the inner zones which pn-junction extends to said major surface; and

said control electrode contacting said one of the inner zones at said major surface and overlying and ohmically contacting at least a portion of said highly doped zone along said surface, said control electrode being positioned such that at least a portion of said pn-junction is between the control electrode and said emitter zone whereby said highly doped zone serves as a barrier for the charge carriers of the control current.

3,858,237
SEMICONDUCTOR INTEGRATED CIRCUIT ISOLATED THROUGH DIELECTRIC MATERIAL

Hajime Sawazaki, Tokyo; Kiyohide Sakai, Yokohama; Hiroshi Tsutsumi, Fujisawa; Yasusuke Sumitomo; Kazuo Niwa, both of Yokohama, and Eisaku Inaba, Kitakyushu, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 9, 1973, Ser. No. 358,641

Claims priority, application Japan, May 13, 1972, 47-47382

Int. Cl. H01l *19/00*

U.S. Cl. 357—49 **5 Claims**

1. A semiconductor integrated circuit comprising;

a support substrate (**11**);

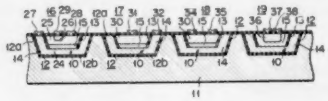
a plurality of bottomed enclosed outer dielectric layers (**12**) whose one end is open at one surface of the support substrate (**11**), said bottomed outer dielectric layers (**12**) having substantially no discontinuities therein other than the one open end;

a bottomless inner dielectric layer (**13**) formed within and adjacent to the outer dielectric layer (**12**); and

an island region (**10**) having; an outer semiconductor region (**14**) of polycrystalline material defined between the inner and outer dielectric layers (**13,12**); and an inner semiconductor region (**24,25,26**) of monocrystalline material within the inner dielectric layer (**13**); a transistor element (**16**) being formed in said island region (**10**) and having electrodes which are positioned on said one surface of said substrate (**11**), said transistor element (**16**) comprising:

a base region (**25**) of one conductivity type and situated within said inner dielectric layer (**13**);

a collector region (**24**) of the other conductivity type and including a portion (**15**) situated within said inner dielectric layer (**13**), said collector region (**24**) further including



said outer semiconductor region (**14**), said collector region (**24**) defining a PN junction with said base region (**25**); the peripheral end of said PN junction being situated within said inner semiconductor region and extending to said inner dielectric layer (**13**), the peripheral edge of the PN junction terminating at said inner dielectric layer (13);

said base region (**25**) being higher in impurity concentration than said collector region (**24**); and

an emitter region (**26**) formed within said base region (**25**) and having a conductivity type opposite to that of the base region (**25**);

the peripheral side surfaces of both the outer and inner dielectric layers (**12,13**) being inclined toward the center of said island region (**10**) so that the rectangular cross sections of the portions respectively surrounded by the side surfaces thereof are respectively decreased toward the inside of the substrate (**11**).

3,858,238
SEMICONDUCTOR DEVICES CONTAINING AS IMPURITIES AS AND P OR B AND THE MEHTOD OF MANUFACTURING THE SAME

Masakatsu Nakamura; Toshio Yonezawa; Taketoshi Kato, all of Yokohama; Masaharu Watanabe, Kawasaki, and Minoru Akatsuka, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Division of Ser. No. 363,132, May 23, 1973, which is a continuation of Ser. No. 78,819, Oct. 7, 1970, abandoned. This application Sept. 26, 1973, Ser. No. 400,928

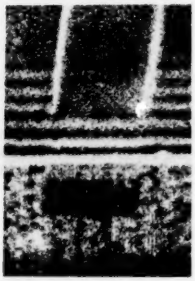
Claims priority, application Japan, Feb. 7, 1970, 45-10376; Mar. 2, 1970, 45-17103; Mar. 13, 1970, 45-20826; Mar. 28, 1970, 45-25627The portion of the term of this patent subsequent to May 21, 1991, has been disclaimed.

Int. Cl. H01l *3/14*

U.S. Cl. 357—63 **9 Claims**

1. A semiconductor device having a highly doped surface region comprising:

a. a silicon semiconductor substrate; and
b. a highly doped surface region formed in one surface of said substrate including at least one first impurity selected from the group consisting of phosphorus and boron, said highly doped surface region further including a second



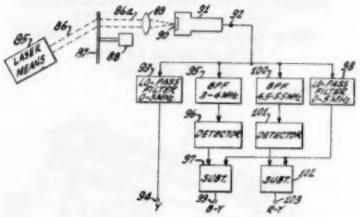
impurity of arsenic to compensate for a lattice strain caused by said first impurity when the first impurity is doped in the surface region of the substrate, and the number of atoms of arsenic being smaller than the number of atoms of said first impurity in said highly doped surface region.

3,858,239

COLOR ENCODED HOLOGRAM PLAYBACK APPARATUS

Istvan Gorog, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 880,680, Nov. 28, 1969, Pat. No. 3,790,701. This application Sept. 27, 1973, Ser. No. 401,232
Int. Cl. H04n *9/02*
U.S. Cl. 358—2 **3 Claims**



1. Apparatus for producing signals representative of the color and brightness of a scene from a series of successive hologram records, of images of said scene upon each of which image is superimposed spatially encoded information representative of selected component colors of said scene, said apparatus comprising:

a source of spatially coherent monochromatic light;

an image pickup device including a photosensitive electrode;

means for moving said series of hologram records in succession across an optical path of said image pickup device;

means for directing light from said source along said optical path through said hologram records to form on the photosensitive electrode of said image pickup device a composite image comprising a monochromatic image of said scene and spatially encoded color information superimposed thereon;

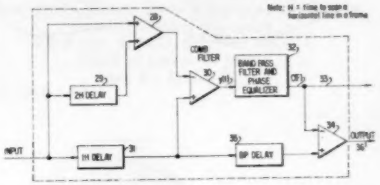
means coupled to said image pickup device for deriving therefrom in response to the scanning of said composite image a composite output signal inclusive of respective brightness-representative and color-representative components.

3,858,240

REDUCED RATE SAMPLING PROCESS IN PULSE CODE MODULATION OF ANALOG SIGNALS

Leonard S. Golding, Rockville, and Ronald K. Garlow, Damascus, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Continuation of Ser. No. 105,386, Jan. 11, 1971, abandoned. This application Sept. 14, 1972, Ser. No. 289,027
Int. Cl. H04n *9/02*
U.S. Cl. 358—13 **9 Claims**



1. A TV communications system for digitizing and communicating an analog TV composite signal comprising:

a. transmitter comb filter means responsive to a composite TV signal having modulated chrominance components interleaved with luminance components for separating said modulated chrominance from said luminance, said comb filter comprising;

i. first means for combing over the entire band of said composite signal for extracting said modulated chrominance components from said composite signal;

ii. band pass filter means responsive to said extracted modulated chrominance signal for blocking all signals below a certain frequency and for passing said modulated chrominance, said certain frequency being the frequency just below the lowest sideband of said modulated chrominance; and

iii. means for subtracting said band passed chrominance from said composite signal to obtain a luminance signal which is uncombed up to said certain frequency and which has the modulated chrominance combed therefrom;

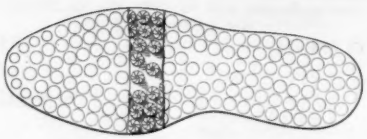
b. means for pulse amplitude sampling said latter luminance at a sampling rate f_s, where $f_s - W_s$ is substantially equal to or less than the said certain frequency and is an odd multiple of half the TV horizontal line rate and is less than $2\,W_s$, and w_s the upper frequency of the luminance signal bandwidth; and

c. means for converting each sample pulse amplitude into a digital quantity.

DESIGNS

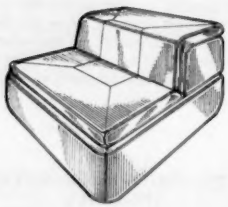
DECEMBER 31, 1974

234,013
BOOT SOLE FOR FOOTBALL FOOTWEAR
Raymond B. Lamarche, Beloeil, Quebec, Canada, assignor to The Acton Rubber Ltd., Acton Vale, Quebec, Canada
Filed July 31, 1972, Ser. No. 276,354
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

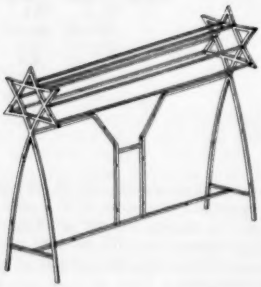


234,014
SHOE SOLE
Francisco Talamantes Traver, Vall de Uxo, Spain, assignor to Silvestre Segarra E Hijos, S.A., Vall de Uxo, Castellon, Spain
Filed Apr. 9, 1973, Ser. No. 349,339
Claims priority, application Spain Nov. 8, 1972
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

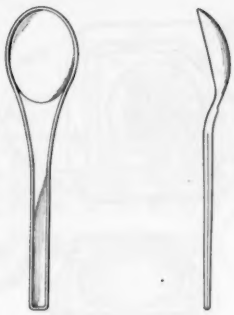
234,015
SEAT
Charles Bernard, 18 a 30 Rue Saint Antoine, 93 Montreuil-sous-Bois, France
Filed June 14, 1972, Ser. No. 262,822
Claims priority, application France Jan. 10, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47



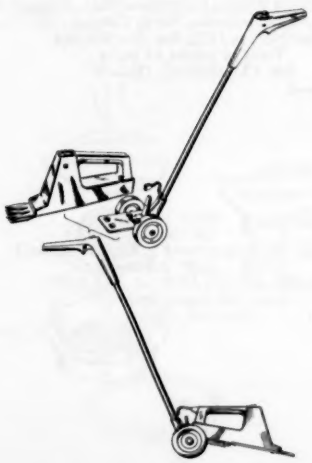
234,016
RACK FOR PRAYER SHAWLS
Bernard D. Smilowitz, 44 Wodland Ave., West Orange, N.J. 07052
Filed May 23, 1973, Ser. No. 363,306
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85



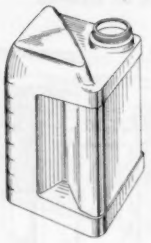
234,017
PLASTIC SPOON
Hubert E. Christian and David W. Lee, Phoenix, Ariz., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed May 21, 1973, Ser. No. 362,357
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—138



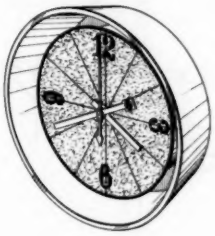
234,018
ELECTRIC GRASS SHEAR
Robert J. De Brey, Edina, Minn., assignor to Fingerhut Corporation, Minnetonka, Minn.
Filed Oct. 20, 1972, Ser. No. 299,623
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8



234,019
JUG
Herbert F. D'Alo, Arlington Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed May 29, 1973, Ser. No. 365,009
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—44

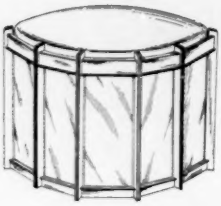


234,020
CLOCK OR SIMILAR ARTICLE
Theodore G. Daher, Stratford, Conn., assignor to General Electric Company
Filed Apr. 6, 1973, Ser. No. 348,647
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—17

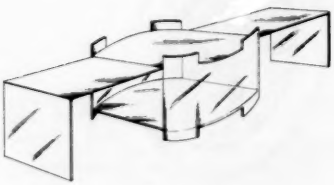


234,021
FISHING LURE
Douglas W. Parker, 1801 Garner Lane, Fort Smith, Ark. 72901
Filed Jan. 30, 1974, Ser. No. 437,791
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

234,022
COMPUTER MAINFRAME CONSOLE
Seymour R. Cray, Lester T. Davis, and Maurice D. Roush, Chippewa Falls, Wis., assignors to Control Data Corporation, Minneapolis, Minn.
Continuation-in-part of design application Ser. No. 341,429, Mar. 15, 1973. This application Apr. 30, 1973, Ser. No. 355,997
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

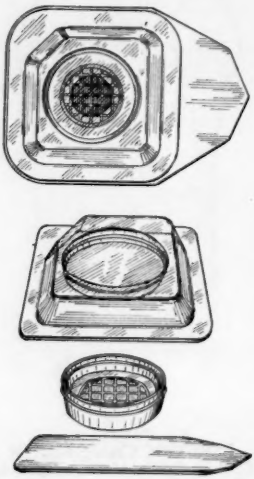


234,023
DOG HOUSE
Quentin T. Cox, 1216 W. 226th St., Torrance, Calif. 90502
Filed Apr. 16, 1973, Ser. No. 351,778
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

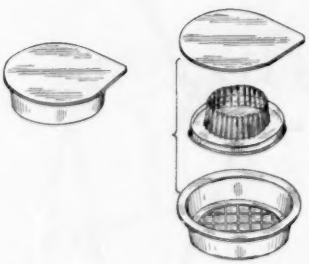


234,024
AQUARIUM
Charles D. Kuneff, 891 Cedar St., Alameda, Calif. 94501
Filed Dec. 4, 1972, Ser. No. 312,230
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—9

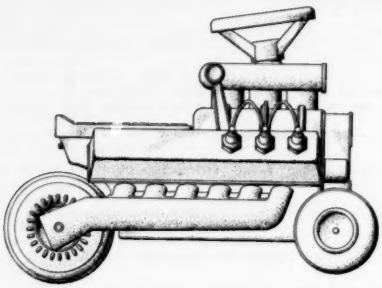
234,025
DISPOSABLE CULTURE DEVICE
Edward Potter, 2213 Waverly Place, Waukegan, Ill. 62692
Filed Nov. 6, 1972, Ser. No. 304,887
Term of patent 14 years
Int. Cl. D24—*02*; D9—*04*
U.S. Cl. D32—1



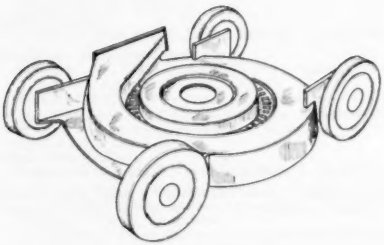
234,026
DISPOSABLE CULTURE DEVICE
William Robert Winter, Columbus, Ohio, assignor to Abbott Laboratories, North Chicago, Ill.
Filed Nov. 6, 1972, Ser. No. 304,888
Term of patent 14 years
Int. Cl. D24—*02*; D9—*04*
U.S. Cl. D32—1



234,027
TOY VEHICLE
Jerrold J. Krumholz, West Orange, Herbert H. V. Reisgen, Westfield, and Paul B. Means, Basking Ridge, N.J., assignors to Kusan, Inc., Nashville, Tenn.
Filed Mar. 29, 1973, Ser. No. 346,169
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

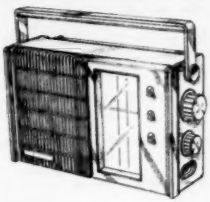


234,028
VENTED ROTARY LAWN MOWER HOUSING
Donald G. Erickson, Racine, and Vernon R. Kaufman, Cedarburg, Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.
Filed May 29, 1973, Ser. No. 364,883
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 B

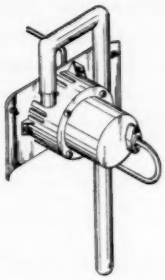


234,029
RING
Carmen Leo, 7520 Merriman Road, Apt. 202, Westland, Mich. 48185
Filed Aug. 22, 1973, Ser. No. 390,356
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C

234,030
PORTABLE RADIO
Ken Kawamura, Katano, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 20, 1973, Ser. No. 353,173
Claims priority, application Japan Oct. 20, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



234,031
AERATING PUMP FOR BAIT CONTAINERS
William B. Murray, Houston, Tex., assignor to Sportscraft, Inc., Houston, Tex.
Filed Jan. 26, 1973, Ser. No. 327,089
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R



234,032
SUCTION NEEDLE FOR EAR OPERATIONS
Ricardo J. Heros, Memphis, Tenn., assignor to Richards Manufacturing Co., Memphis, Tenn.
Filed Sept. 15, 1972, Ser. No. 289,678
Term of patent 7 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF DECEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aasland, Byron T.; Dankel, Douglas D.; and Franklin, Richard W., to Roper Corporation. Shredder-bagger having blade assembly. 3,857,521, Cl. 241-243.000.

AB Volvo Penta: *See—*
Bergstedt, Karl Abdon, 3,857,357.

Abcor, Inc.: *See—*
Crowley, Richard P., 3,857,782.

Abdo, Kamal M.; and Cahilly, Glenn M., to Grace, W. R., & Company. Ruminant feed additive and method of preparing the same. 3,857,971, Cl. 426-53.000.

Abramitis, Walter W. Amine salts of substituted succinamic acids. 3,857,879, Cl. 260-501.110.

Acar, Ali, to International Telephone and Telegraph Corporation. Pressure regulating valve assembly. 3,857,615, Cl. 303-21.00f.

ACF Industries, Incorporated: *See—*
Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,857,908.
Rhodes, Allen F.; and Alaniz, Ruben G., 3,857,408.

Acker, Donald J. Sofa with detachable bolster. 3,857,120, Cl. 5-12.00r.

Ackermann, Guenter R., to Rohm and Haas Company. Preparation of sulfoxide sorbents. 3,857,823, Cl. 260-79.30r.

Actric Limited: *See—*
Griffiths, Philip John, 3,857,553.

Adams, George R.; and Meisenbach, William T., to Armstrong Cork Company. Sound-absorbing wedge. 3,857,459, Cl. 181-33.0gd.

Adams, Ronald E.; and Wilson, Eugene M., to Caterpillar Tractor Company. Bulldozer blade with vibrating ripper shank. 3,857,447, Cl. 172-777.000.

Adamson, Shelby D.: *See—*
Harris, Paul M.; and Adamson, Shelby D., 3,857,779.

Adar, Inc.: *See—*
Denny, Robert B., 3,858,117.

Adickes, Fred C., to Texstar Corporation, The. Modular cabinet system. 3,857,619, Cl. 312-107.000.

Admiral Corporation: *See—*
Scoubis, John A., 3,858,003.

Agfa-Gevaert: *See—*
Verhille, Karel Eugeen; and Noe, Robert Joseph, 3,857,708.

Agfa-Gevaert Aktiengesellschaft: *See—*
Schneider, Horst; Fergg, Berthold; Zahn, Wolfgang; Friedrich, Hujer; and Erich, Nagel, 3,857,220.
Stievenart, Emile Frans; and Mueller, Juergen, 3,858,229.

Agulnek, Harry; and Mishcon, Lester, to Singer Company, The. Pattern wheel with pivoted jacks supported by inserted wall members. 3,857,258, Cl. 66-50.00a.

Ahmed, Samir A.: *See—*
Pappalardo, Romano G.; and Ahmed, Samir A., 3,857,793.

Aishima, Itsuho; Sakurai, Hisaya; and Shimizu, Hiroshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for extruding a foamed, molded article. 3,857,914, Cl. 264-45.500.

Aitken, John Stuart; Green, Bernard Leslie; and Cormie, William Alexander, to Honeywell Information Systems Limited. Solderability testing. 3,857,290, Cl. 73-432.00r.

Akatsuka, Minoru: *See—*
Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,858,238.

Aktieselskabet Niro Atomizer: *See—*
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Fink, Roger H., 3,857,522.

Alaniz, Ruben G.: *See—*
Rhodes, Allen F.; and Alaniz, Ruben G., 3,857,408.

Albe-Fessart, Denise; Auffray, Pierre; and Gallouin, Francois. Method for producing foie gras by induction of hyperphagia in geese. 3,857,961, Cl. 426-2.000.

Alcan Research and Development Limited: *See—*
Hirschfield, John Alfred; Lablans, Johannes Franciscus; and Shankland, William, 3,857,163.

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Alemany, Raymond. Gynaecological device. 3,857,394, Cl. 128-260.000.

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Neugebauer, Gerhard, 3,857,288.

Alkire, Carl M. Moisture saving apparatus. 3,857,196, Cl. 47-48.500.

Allan, Barry D., to United States of America, Army. Thixotropic metal-containing monomethylhydrazine fuel and method of preparing the same. 3,857,743, Cl. 149-20.000.

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Allen, Ethan J.: *See—*
Sommerfeld, Irwin H.; Morgan, Edmond L.; Allen, Ethan J.; and Dewey, Charles N., 3,857,383.

Allen, John W.: *See—*
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Allied Chemical Corporation: *See—*
O'Brien, John Butler; Woolf, Cyril; and Dear, Robert Ernest Arthur, 3,857,957.
Rogic, Milorad M.; and Fuhrmann, Robert, 3,857,510.

Allred, Worth P., to University of Southern California. Crystal grower. 3,857,679, Cl. 23-273.000.

Alow Chemical Company, The: *See—*
Crozier, William Andrew; and Klein, Dieter Heinrich, 3,857,808.

Alpine Designs: *See—*
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Alps Electric Co., Ltd.: *See—*
Mikami, Yasushi, 3,857,644.

Alton, James G., Equipment Co. Limited: *See—*
Alton, James Gowan, 3,857,578.

Alton, James Gowan, to Alton, James G., Equipment Co. Limited. Wear bar for a snowmobile ski. 3,857,578, Cl. 280-28.000.

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Aluminum Company of America: *See—*
La Barge, Robert L.; and Leftault, Charles J., Jr., 3,857,508.
Martin, Guy E., 3,857,269.
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Amdahl Corporation: *See—*
Amdahl, Gene M.; Tobias, Richard J.; and Gray, Robert C., 3,858,183.

Amdahl, Gene M.; Tobias, Richard J.; and Gray, Robert C., to Amdahl Corporation. Data processing system and method therefor. 3,858,183, Cl. 340-172.500.

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American Technical Industries, Inc.: *See—*
Gelardi, Joseph T., 3,857,421.

Amey, Earle B.: *See—*
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Amin, Shirish Chamdubhai; Jones, David Henry; and Maxwell, Donald Robert, to May & Baker Limited. Phenothiazine derivatives in the treatment of spasticity of muscles. 3,857,943, Cl. 424-247.000.

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Amsted Industries, Incorporated: *See—*
Kaufhold, Horst Thomas, 3,857,495.
Neumann, Otto Walter, 3,857,341.

Amstutz, Harlan C. Prosthesis holder. 3,857,389, Cl. 128-92.0ec.

Anaconda Company, The: *See—*
Hansen, Theodore E.; and Wilson, Floyd A., 3,857,996.

Anand, Satish K.: *See—*
Goldsby, Arthur F.; Anand, Satish K.; and Haberl, Frank J., 3,858,181.

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Anderson, Donald L., to Del Mar Engineering Laboratories. Electrocardiac computer. 3,858,034, Cl. 235-151.300.

Anderson, Warren A.; Labadini, William M.; and Passmore, Edmund M., to GTE Sylvania Incorporated. Extended life, double coil incandescent lamp. 3,858,086, Cl. 315-49.000.

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Vernam, William D.; and Anderson, William A., 3,857,165.

Andersson, Sven Gerhard. Device for setting knife holders, particularly at a band cutting machine. 3,857,315, Cl. 83-504.000.

Andrus, Everett Howard. Apparatus for heat treating continuous wire and rod. 3,857,673, Cl. 432-59.000.

Angelbeck, Albert W., to United Aircraft Corporation. Measurement of phase profile across a high power laser beam. 3,857,636, Cl. 356-106.00r.

Angelbeck, Albert W.; and Longtin, Donald J., to United Aircraft Corporation. Vibration isolation in a gas laser. 3,858,122, Cl. 331-94.50r.

Antes, Jack E.: *See—*
Foster, Jack B.; and Antes, Jack E., 3,857,188.

Anthony, Andrew James: *See—*
Jones, Thomas Alan; and Anthony, Andrew James, 3,857,599.

Antoine, Jacques; and Vayssiere, Pierre, to Institut de Recherches de la Siderurgie Francaise. Method of continuously smelting a solid material rich in iron metal in an electric arc furnace. 3,857,697, Cl. 75-11.000.

Aoki, Yukio; Yoshida, Susumu; Kato, Shoichi; Inada, Satoshi; and Ishida, Shuichi, to Nippon Kayaku Kabushiki Kaisha. Acaricides. 3,857,954, Cl. 424-337.000.

Apel, Konstantin. Switching arrangement for a synchronous motor. 3,858,099, Cl. 318-162.000.

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Arai, Tohru: *See—*
Komatsu, Noboru; Arai, Tohru; Obayashi, Mikio; and Endo, Junji, 3,857,725.

Arcella, Frank G., to Westinghouse Electric Corporation. Heat pipe wick restrainer. 3,857,441, Cl. 165-105.000.

Arco Polymers, Inc.: *See—*
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Aref, Moustafa M.; Stroz, John J.; and Johnson, Gordon W., to Canadian Patents & Development Limited. Process for the production of frozen eggs. 3,857,974, Cl. 426-148.000.

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Ashbell, Theodore Shelly. Surgical device for holding and retracting skin or bone. 3,857,386, Cl. 128-20.000.

Ashida, Takashi; and Yamada, Nobuo, 1/2 each to Fujitsu Limited and Fujitsu Ten Limited. Tuning arrangement having coaxially mounted shafts and removable knobs. 3,858,129, Cl. 334-78.000.

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Taylor, Nicholas Simon Hall; and Noren, Carl Anders, 3,857,516.

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Aubrey, William B.; Giordano, Angelo A.; and Giordano, Raymond. Liquid mixing apparatus. 3,857,409, Cl. 137-604.000.

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Auffray, Pierre: *See—*
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Barr, Frederick J., Jr.; and Ray, Clifford H., to Petty-Ray Geophysical, Inc. Method of filtering multi-component seismic data. 3,858,168, Cl. 340-15.5cp.

Barr-Stalfort Company; Division Pittway Corporation: *See—*
Cunningham, Ernest R., 3,857,422.

Barre, Jean-Gabriel, to Centre Technique du Cuir. Device for assembling shoe components. 3,857,129, Cl. 12-1.00f.

Barrett, Fred O.: *See—*
Sturwold, Robert J.; and Barrett, Fred O., 3,857,865.

Barry-Wright Corporation: *See—*
Dean, Carl J., 3,857,136.

Basil, Berkeley: *See—*
Wooldridge, Kenneth Robert Harry; and Basil, Berkeley, 3,857,952.

Bass, Michael; and Bua, Dominic P., to Raytheon Company. Organ monocrystalline light wavelength changing element. 3,858,124, Cl. 332-7.510.

Bastard, Gilbert; and Moulin, Michel, to Battelle Memorial Institute. Printer for alphanumeric characters. 3,857,470, Cl. 197-1.00r.

Bastiaans, Cedric R. High speed tape cassette. 3,857,532, Cl. 242-199.000.

Battelle Memorial Institute: *See—*
Bastard, Gilbert; and Moulin, Michel, 3,857,470.

Baud, Roger. Process and device for extracting blood from slaughtered animals. 3,857,137, Cl. 17-1.00c.

Bauer, Gunther: *See—*
Cardinal, Jutta; Heinrich, Karl; and Bauer, Gunther, 3,857,233.

Baumgartner, Ernst. Spring-loaded snap-action stepping-switch-operating mechanism. 3,858,016, Cl. 200-153.00p.

Baurle, Herbert F.: *See—*
Masak, Raymond J.; and Baurle, Herbert F., 3,858,218.

Bausch & Lomb Incorporated: *See—*
Rosenberger, Harold E.; and Young, Ralph B., 3,857,626.

Bausenbach, Arthur E.; and Palopoli, Frank, to Sanitary Controls, Inc. Mechanism for locking refuse container on truck platform. 3,857,504, Cl. 214-517.000.

Baxter Laboratories, Inc.: *See—*
Martinez, F. Jesus, 3,857,785.

Bayer Aktiengesellschaft: *See—*
Breuer, Wolfram; Deprez, Jacques; and Strum, Burthold, 3,857,760.
Findeisen, Kurt; and Wagner, Kuno, 3,857,897.
Knipp, Ulrich; Boden, Heinrich; Ersfeld, Heinrich; Schneider, Walter; and Moeres, Reiner, 3,857,550.
Kuhle, Engelbert; Siegle, Peter; Behrenz, Wolfgang; and Hammann, Ingeborg, 3,857,860.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,857,849.
Oertel, Harald; Zorn, Bruno; and Thoma, Wilhelm, 3,857,809.

Bazarian, Albert; and Kineyko, William Robert, to General Instrument Corporation. Gas tube transient voltage protector for telecommunication systems. 3,858,077, Cl. 313-217.000.

Bazille, James H., Jr., to Minnesota Mining and Manufacturing Company. Solderless tap connector. 3,858,157, Cl. 339-98.000.

Beausoleil, William F.; Keefe, George E.; and Walker, Ernest L., to International Business Machines Corporation. Magneto resistive signal multiplier for sensing magnetic bubble domains. 3,858,189, Cl. 340-174.0eb.

Beauvais, Max; and Sindall, Robert A., Jr. Process for treating mushrooms. 3,857,979, Cl. 426-204.000.

Beck, Edward: *See—*
Bedo, Alfred; and Beck, Edward, 3,857,410.

Beck, James R.; and Suhr, Robert G., to Lilly, Eli, and Company. Substituted benzonitriles. 3,857,862, Cl. 260-347.200.

Beck, Ronald A.; and Breu, Dennis L., to Sperry Rand Corporation. Core stringing apparatus. 3,857,155, Cl. 29-203.0mm.

Becker, Alvin R.: *See—*
Mole, Philip J., 3,857,758.

Becker, Ernst; Naarmann, Herbert; Schneider, Jurt; and Kessler, Hellmuth. Acetylene group-containing polymers. 3,857,821, Cl. 260-78.40e.

Beckman Instruments, Inc.: *See—*
Sternberg, James C., 3,857,771.

Becton Dickinson Electronics Company: *See—*
Epstein, Howard C., 3,858,065.

Bedard, Ronald L.; and Kampe, Andrew J., to Raychem Corporation. Voltage stress-resistant conductive articles. 3,858,144, Cl. 338-22.00r.

Bedo, Alfred; and Beck, Edward, to Sno-Trik Company. Switching valve. 3,857,410, Cl. 137-625.270.

Behrenz, Wolfgang: *See—*
Kuhle, Engelbert; Siegle, Peter; Behrenz, Wolfgang; and Hammann, Ingeborg, 3,857,860.

Beiswanger, John P. G.: *See—*
Krupin, Fred; Beiswanger, John P. G.; and Nassry, Assadullah, 3,857,789.

Bell, Harvey: *See—*
Szymanski, Chester D.; Tessler, Martin M.; and Bell, Harvey, 3,857,976.

Bell, Raymond Henry Bell: *See—*
Rishbein, John; Bell, Raymond Henry Bell; Blarke, Anthony James; and Merriman, Peter, 3,857,800.

Bell Telephone Laboratories, Incorporated: *See—*
Boyle, Willard Sterling; and Smith, George Elwood, 3,858,232.
Henn, Robert Walter; Scholly, Christian; Voytko, James Emery; Williford, Thomas Leslie, Jr.; McGonigal, Charles; Frey, Dean Rudisill; Smith, Donald Tolmon; and Gantis-Vedejs, Arthur, 3,858,158.

Bella, Davide Della; Veneziani, Carlo; Chiarino, Dario; and Teotino, Uberto Maria, to Whitefin Holding S.A. Stereoisomers of 1-(1'(-o-chlorobenzyl)-2-pyrryl)-2-disec. butylamino-ethanol. 3,857,857, Cl. 260-326.501.

Beloit Corporation: *See—*
Klebanoff, Gregory, Jr., 3,857,486.
Melead, James J.; and Zink, Stanley C., 3,857,524.

Bendix Corporation, The: *See—*
Esch, Robert E., 3,858,033.
Polye, William Ronald, 3,858,097.

Benisek, Ladislav. Textile finishing. 3,857,727, Cl. 117-62.000.

Benkoe, Erwin: *See—*
Goldfarb, Adolph E.; and Benkoe, Erwin, 3,857,564.
Goldfarb, Adolph E.; and Benkoe, Erwin, 3,857,567.
Goldfarb, Adolph E.; and Benkoe, Erwin, 3,857,569.

Benzuly, Harold J.: *See—*
Merriweather, Kenneth A.; and Benzuly, Harold J., 3,858,000.

Beondu A.G.: *See—*
Giesen, Gerardus Johannes, 3,857,367.

Bergstedt, Karl Abdon, to AB Volvo Penta. Torque compensating mechanism for boat drives. 3,857,357, Cl. 115-41.00r.

Berkovitz, Harry; and Tosato, Lawrence, to Westinghouse Electric Corporation. Closure system. 3,857,466, Cl. 187-52.000.

Berndt, Wilhelm, to Volkswagenwerk AG. Gas pedal arrangement. 3,857,304, Cl. 74-877.000.

Bernstein, Bruce S.; Hyman, Seymour; and Kapoor, Ramesh C., to Herculite Protective Fabrics Corporation. Activated polymer materials and process for making same. 3,857,934, Cl. 424-30.000.

Berntson, Leslie G.: *See—*
Blackley, William D.; Castle, Richard B.; and Berntson, Leslie G., 3,857,905.

Berry Metal Company: *See—*
Wright, James C., 3,857,340.

Bert, Paul A.: *See—*
Jedynak, Leo; and Bert, Paul A., 3,858,194.

Bertozzi, Marcello; and Chioffi, Mario. Peripheral cam actuating a plurality of contact blades. 3,858,017, Cl. 200-153.01b.

Beutner, Heinz Paul; and O'Neill, Charles Edward, to International Nickel Company, Inc., The, mesne. Production of nickel sulfate. 3,857,926, Cl. 423-544.000.

Bieber, Herman; and Spenadel, Lawrence, to Esso Research and Engineering Company. Solid propellant formulation containing fluoroamino compounds and polymers. 3,857,742, Cl. 149-19.300.

Bio-Response, Inc.: *See—*
Rose, Samuel, 3,857,393.

Bissell, Robert D., to Dresser Industries, Inc. Overload protected bourdon tube. 3,857,219, Cl. 53-37.000.

Bissell, Robert Donald; and Plavcan, Edward Joseph, to Dresser Industries, Inc. Zero adjustment gauge instrument. 3,857,286, Cl. 73-363.900.

Bitecola, Daniel. Artificial shrubs. 3,857,747, Cl. 161-21.000.

Blackley, William D.; Castle, Richard B.; and Berntson, Leslie G., to Minnesota Mining and Manufacturing Company. Powdered coating composition of unsaturated glycidyl polymer containing a sulfur terminating group, dicarboxylic acid, polyester and polyacrylte. 3,857,905, Cl. 260-835.000.

Blanco, Louis A.; and Wenning, William F., Jr., to Commercial Decal, Inc. Color decalcomania and method. 3,857,746, Cl. 156-89.000.

Blandford, George Alvah, to Lucas Aerospace Limited. Rotary hydraulic machines. 3,857,326, Cl. 91-492.000.

Blarke, Anthony James: *See—*
Rishbein, John; Bell, Raymond Henry Bell; Blarke, Anthony James; and Merriman, Peter, 3,857,800.

Bliss & Laughlin Industries, Incorporated, mesne: *See—*
Kornfeld, Jack P., 3,858,031.

Block, Alvin W.: *See—*
Mole, Philip J., 3,857,758.

Block, Delbert W.: *See—*
Harbolt, Bruce A.; Claghorn, David A.; and Block, Delbert W., 3,857,499.

Blonder-Tongue Laboratories, Inc.: *See—*
Zarro, Michael, 3,858,156.

Bloom, Joseph Louis, to Lucas, Joseph, (Industries) Limited. Speed responsive governor mechanisms. 3,857,291, Cl. 73-541.000.

Bobst, J., & Fils, S.A.: *See—*
Luska, Zdenek, 3,858,052.

Boden, Heinrich: *See—*
Knipp, Ulrich; Boden, Heinrich; Ersfeld, Heinrich; Schneider, Walter; and Moeres, Reiner, 3,857,550.

Boehringer Ingelheim GmbH: *See—*
Seeger, Ernst; Engel, Wolfhard; Tuegel, Helmut; and Engelhardt, Gunther, 3,857,958.

Bohm, Harald: *See—*
Louis, Gerhard; and Bohm, Harald, 3,857,735.

Bonne, Ulrich, to Honeywell Inc. Stereoscopic display system. 3,858,001, Cl. 178-6.500.

Booth, Frank B., to Union Oil Company of California. Recovery of catalyst complexes. 3,857,895, Cl. 260-604.000.

Borden, Inc.: *See—*
Shenfeld, Richard Stewart; and Brown, Orville E., 3,857,803.

Borg-Warner Corporation: *See—*
Mamo, Anthony C.; Paulson, Donald L.; and Ozag, Gustav, 3,857,118.

Borodin, Daniel J.; and Henry, Mort W., to New York Wire Mills Corporation. Hinge for hinged stirrup fabric. 3,857,416, Cl. 138-175.000.

Bory, Michael, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Apparatus for regulating the position of a machine component. 3,857,638, Cl. 356-153.000.

Bosch, Robert, G.m.b.H.: *See—*
Kugelmann, Adolf; Conzelmann, Gerhard; Henninger, Ewald; Meyer, Dieter; and Seiler, Hartmut, 3,858,177.

Bossert, Friedrich: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,857,849.

Bossi, Giorgio; and Schiaparelli, Aldo, to Honeywell Information Systems Italia. D. C. motor speed control system through phase control and phase locking circuit. 3,858,100, Cl. 318-314.000.

Boulanger, Henry J., to Texas Instruments, Incorporated. Pushbutton keyboard system. 3,858,202, Cl. 340-365.00r.

Bourne, Walter R. Collapsible garment dryer. 3,857,493, Cl. 211-178.00a.

Bowman, Bobby R.: *See—*
Drelick, Arthur H.; and Bowman, Bobby R., 3,857,728.

Bown, Barry: *See—*
Gilpin, William Cecil; Bown, Barry; and Hedley, Christopher Stelling, 3,857,698.

Boyle, Elbert I. Tire removal tool. 3,857,431, Cl. 157-1.260.

Boyle, Willard Sterling; and Smith, George Elwood, to Bell Telephone Laboratories, Incorporated. Information storage devices. 3,858,232, Cl. 357-24.000.

BP Chemicals Limited: *See—*
Coulter, Michael Oliver, 3,857,704.

Bradley, Walter Eugene, Clontz, Raeford Warren; Floyd, Terry Stephen; and Honeycutt, James Reed, to Celanese Corporation. Filament breakage detection and correction. 3,857,309, Cl. 83-13.000.

Brady, Donnie G.; Gray, Roy A.; and Doss, Richard C., to Phillips Petroleum Company. Sulfonyldialkanoic acid esters of 2,3-dibromo-1-alkanols. 3,857,875, Cl. 260-481.00r.

Brandlein, James D., to Western Electric Company, Incorporated. Electrical switching device having self-cleaning contactor elements. 3,858,021, Cl. 200-164.000.

Brannon, William E., to Staco-Switch, Inc. Pushbutton with spring contactor. 3,858,020, Cl. 200-159.00a.

Brauchi, Andre. Wristlet. 3,857,237, Cl. 59-80.000.

Bray, Arnold, to Lucas Aerospace Limited. Generator control circuits. 3,858,108, Cl. 322-28.000.

Breckenridge, Robert G., to Rockwell International Corporation. Noncommutating superconducting D.C. machine. 3,858,066, Cl. 310-40.000.

Breitmeier, Max. Method and means for continuous distribution of electrical energy. 3,858,110, Cl. 323-20.000.

Brems, John Henry. Linear indexing mechanism. 3,857,292, Cl. 74-52.000.

Brems, John Henry. Prime mover mechanism and transfer system. 3,857,479, Cl. 198-219.000.

Breu, Dennis L.: *See—*
Beck, Ronald A.; and Breu, Dennis L., 3,857,155.

Breuer, Wolfram; Deprez, Jacques; and Strum, Burthold, to Bayer Aktiengesellschaft. Process of measuring the concentration of a dissociatable component in a gas and apparatus therefor. 3,857,760, Cl. 204-1.00t.

Briddell, Charles D.; d/b/a C.D.B. Company: *See—*
Hammond, John W., 3,858,166.

Bridgestone Tire Company Limited: *See—*
Nakamura, Kihei; Yamazaki, Harumichi; Takeguchi, Kazuo; and Kondo, Yoshikazu, 3,857,596.

Briggs & Stratton Corporation: *See—*
Santi, John D., 3,857,545.

Briggs, William Scott, to Georgia-Pacific Corporation. Process for preparation of lignin epoxide composition and composition thereof. 3,857,830, Cl. 260-124.00r.

Bristol-Myers Company: *See—*
Kawaguchi, Hiroshi; Tomita, Koji; Tsukiura, Hiroshi; and Saito, Kyo-Ichiro, 3,857,756.
Mackles, Leonard, 3,857,960.

Brock, Winford G.; and Hodges, James C., Jr., to United States of America, Army. Selectable-impulse solid propellant rocket motor. 3,857,239, Cl. 60-204.000.

Brook, David E.: *See—*
Yolles, Seymour, 3,857,964.

Brooklyn Products, Inc.: *See—*
Linenfelser, Carl J., 3,857,133.

Brooks, Donald Herbert. Metal powder coating apparatus. 3,857,362, Cl. 118-59.000.

Brosseau, Alfred J., to Custom Materials, Inc. Electrically conductive wrist strap. 3,857,397, Cl. 128-384.000.

Brown, Donald C. Refuse container retaining means for invertable container rack of refuse truck. 3,857,503, Cl. 214-302.000.

Brown, Michael Harold, to United Kingdom Atomic Energy Authority. Thermoelectric battery spring supported in casing. 3,857,738, Cl. 136-202.000.

Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., to ACF Industries, Incorporated. Apparatus for controlling and modulating engine functions. 3,857,908, Cl. 261-39.00a.

Brown, Orville E.: *See—*
Shenfeld, Richard Stewart; and Brown, Orville E., 3,857,803.

Brown, Robert H.: *See—*
McKee, Arvil B.; Brown, Robert H.; and Horst, Ralph L., 3,857,973.

Bruno, Anthony I. Pumping units for cyclonic elevator. 3,857,651, Cl. 417-171.000.

Brunswick Corporation: *See—*
Schmiedel, Robert C.; and Staerzl, Richard E., 3,858,101.
Woodfill, William L., 3,857,355.

Bruwasser, Herman, to GAF Corporation. Indicia receiving matte sheet materials having an outermost antistatic layer. 3,857,729, Cl. 117-73.000.

Bryant, Robert G., to Gem Industries, Inc. Safety toe trip for crib drop sides. 3,857,122, Cl. 5-100.000.

Bryzinsky, Frank M.: *See—*
Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., 3,857,811.

Bua, Dominic P.: *See—*
Bass, Michael; and Bua, Dominic P., 3,858,124.

Buchan, Robert R. C.: *See—*
Athey, Stuart E.; Buchan, Robert R. C.; and Nally, Glenn M., 3,857,285.

Buchmann Optical Industries: *See—*
Van Hove, Camille Cesar, 3,857,205.

Bucklisch, Ludwig, to Dynamit Nobel AG. Warhead. 3,857,338, Cl. 102-4.000.

Budd, Raymond A., to GTE Sylvania Incorporated. Horizontal convergence means for in-line beam cathode ray tube. 3,858,134, Cl. 335-212.000.

Buffet Crampon: *See—*
Carree, Robert V., 3,857,317.

Buhler, Arthur: *See—*
Schwander, Hansrudolf; Buhler, Arthur; and Hindermann, Peter, 3,857,864.

Buike, Melvin L.: *See—*
Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., 3,857,811.

Bull, Dale L.: *See—*
Miller, Gerald K.; Bull, Dale L.; and Rautiola, Norman A., 3,858,176.

Burek, Ronald K.: *See—*
Roll, Ronald G.; Edwards, Charles R.; Moore, Robert C.; Wagner, George D.; and Burek, Ronald K., 3,858,217.

Buret, Jean-Pierre, to Laboratories Cassenne. Use of 2-mercaptopropionylglycine and its alkali metal salts in treating respiratory diseases. 3,857,951, Cl. 424-319.000.

Burgett, Lee W.; Ware, Chester D.; and Sanborn, Duane F., to Trane Company, The. Unitary air cooled centrifugal refrigeration water chiller. 3,857,253, Cl. 62-289.000.

Burghardt, Edward Lewis. Slingshot-type device with elastic propulsion means. 3,857,379, Cl. 124-20.00r.

Burkert, Edward F.; and Guinn, Paul A., to Freeman Supply Company, The. Process for making soluble cores. 3,857,435, Cl. 164-36.000.

Burkhart, Merle K.: *See—*
Case, Cecil L.; Fell, Ferol S.; and Burkhart, Merle K., 3,857,298.

Burki, Hugues, to Societe Suisse pour l'Industrie Horlogere Management Services SA. Positioning arrangement for a rotating part in a timepiece. 3,857,236, Cl. 58-59.000.

Burkin, Jury Alexandrovich; and Seleznev, Jury Emelyanovich. Mask for manufacturing memory matrices. 3,857,184, Cl. 33-174.00g.

Burnett, Alan, to Wickman Machine Tools Sales, Limited. Slid control mechanisms for machine tools. 3,858,053, Cl. 250-555.000.

Burnett, Henry G.: *See—*
Tellier, Jacob; Burnett, Henry G.; and Lewis, Thomas S., 3,858,213.

Burr, Neil Albert: *See—*
Wall, David Thomas; and Burr, Neil Albert, 3,857,798.

Burroughs Corporation: *See—*
Hoffman, Paul R.; and Naeyaert, Roger S., 3,857,471.

Busch, Norbert: *See—*
Mauvernay, Roland Yves; Busch, Norbert; and Monteil, Andre, 3,857,848.

Buss, Arnold J.: *See—*
Johnson, Russell L.; Peerenboom, Robert J.; Fries, Donald M.; Kaczmarzyk, Leonard M.; and Buss, Arnold J., 3,857,395.

Bustin, Franz, to Mobil Oil Corporation. Method of embossing limp plastic sheet material. 3,857,144, Cl. 28-72.00r.

Butler, Lee D.: *See—*
Grey, Donald M.; and Butler, Lee D., 3,857,498.

Buttke, Frederic P.; and Mathewson, Theodore D., to Caterpillar Tractor Company. Noise suppression means for tractors. 3,857,453, Cl. 180-54.00a.

Buzalski, Bruce T., to Westinghouse Electric Corporation. Multiflash device for close-up photography. 3,858,038, Cl. 240-1.300.

Bynum, Byron G., to Texas Instruments Incorporated. Differentiator and variable threshold gate circuit for use in a vehicle skid control braking system. 3,857,612, Cl. 303-21.0be.

Caddock, Richard E. Non-inductive film-type cylindrical resistor. 3,858,147, Cl. 338-62.000.

Cahilly, Glenn M.: *See—*
Abdo, Kamal M.; and Cahilly, Glenn M., 3,857,971.

Cairns, Hugh; and Rogers, Norman Harold, to Fisons Limited. 4-Oxo-4H-1-benzopyran and 4-oxo-4H-1-thiabenzopyran compounds. 3,857,856, Cl. 260-327.0th.

Canadian Patents & Development Limited: *See—*
Aref, Moustafa M.; Stroz, John J.; and Johnson, Gordon W., 3,857,974.

Canadian Patents and Development Limited: *See—*
Sirianni, Aurelio F.; Funnell, Norman A.; and Puddington, Ira E., 3,857,925.

Canon Kabushiki Kaisha: *See—*
Hasegawa, Goro; and Ito, Masaharu, 3,858,225.
Katayama, Hajime; Nitanda, Hiroshi; and Miyamoto, Koichi, 3,857,189.
Nakagawa, Shiro; Nakamoto, Soichi; Takishima, Yoshiyuki; Taguchi, Tetsuya; and Kakunodate, Masamichi, 3,858,226.
Shimizu, Mitsuo; and Sado, Ichiro, 3,858,197.

Cantaluppi, Angelo: *See—*
Porta, Paolo Della; Giorgi, Tiziano A.; Cantaluppi, Angelo; Ferrario, Bruno; and Mantalenti, Paolo, 3,857,680.

Cappel, Fred; Otto, Jurgen; Nikl, Siegfried; and Rausch, Hans, to Metallgesellschaft Aktiengesellschaft. Process for burning hydrocarbons and cracked products in exhaust gases from sintering machines. 3,857,694, Cl. 75-5.000.

Caravello, Ronald G.; and Mickowski, John, to Porta Systems Corporation. Electronic automatic dialing apparatus. 3,858,009, Cl. 179-90.0bd.

Carbonundum Company, The: *See—*
Economy, James; Cottis, Steve G.; and Nowak, Bernard E., 3,857,814.

Cardinal, Jutta; Heinrich, Karl; and Bauer, Gunther, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Voluminous filament yarn and process to prepare same. 3,857,233, Cl. 57-157.00r.

Carey, Edward J., to Chevron Research Company. Oxygen control by injection of a reducing gas in a catalyst regenerator. 3,857,794, Cl. 252-419.000.

Carlson, Roland Wester, to Kewanee Oil Company, The. Electrically insulating gamma radiation shield. 3,858,050, Cl. 250-515.000.

Carlstedt, Paul A., to CX Corporation. Low drag variable demand strip feed. 3,857,312, Cl. 83-236.000.

Carpenter, Robert G.; and McMahon, Maurice T., Jr., to International Business Machines Corporation. Multiple size gates on fet chips. 3,858,061, Cl. 307-279.000.

Carree, Robert V., to Buffet Crampon. Musical instrument spatulate key. 3,857,317, Cl. 84-380.000.

Carreira, Leonard M.: *See—*
Stein, Ira S.; and Carreira, Leonard M., 3,857,707.

Carron, Georges; Pleyber, Gaetan; and Violet, Jean-Louis, to Commissariat a l'Energie Atomique. Device and method for measuring the watcr-vapor content of a liquid or gaseous medium. 3,857,284, Cl. 73-336.500.

Case, Cecil L.; Fell, Ferol S.; and Burkhart, Merle K., to Hesston Corporation. Neutral safety lock for hydraulic implement controls. 3,857,298, Cl. 74-469.000.

Case, J. I., Company: *See—*
Taylor, Eugene D., 3,857,328.

Castle, Richard B.: *See—*
Blackley, William D.; Castle, Richard B.; and Berntson, Leslie G., 3,857,905.

Castonguay, Richard N., to Mica Corporation, The. Printed circuit board material incorporated binary alloys. 3,857,683, Cl. 29-195.000.

Caterpillar Tractor Company: *See—*
Adams, Ronald E.; and Wilson, Eugene M., 3,857,447.
Buttke, Frederic P.; and Mathewson, Theodore D., 3,857,453.
Gee, James E.; and Stedman, Robert N., 3,857,190.
Grawey, Charles E.; and Caterpillar Tractor Company, 3,857,617.
Grob, Russel Walter, 3,858,104.
Johnson, Howard L., 3,857,404.
Morris, Hugh C., 3,857,302.
Schmitt, James L., 3,857,461.

C.A.V. Limited: *See—*
Mowbray, Dorian Farrar, 3,857,653.

Cavallucci, Antonio. Device for surface sandblasting by metal grit or the like. 3,857,202, Cl. 51-9.00r.

Cebal GP: *See—*
Gaillard, Christian, 3,857,166.

Cecchettini, Giancarlo: *See—*
Cecchettini, Giancarlo; and Paludetti, Antonio (said Paludetti assor. to said), 3,857,561.

Cecchettini, Giancarlo; and Paludetti, Antonio, said Paludetti assor. to said Cecchettini, Giancarlo. Gymnastic apparatus. 3,857,561, Cl. 272-58.000.

Cedarholm, Oscar R. Vehicle fuel injector and carburetor unit. 3,857,912, Cl. 261-144.000.

Celanese Canada Limited: *See—*
Parent, Edgar, 3,858,013.

Celanese Corporation: *See—*
Bradley, Walter Eugene; Clontz, Raeford Warren; Floyd, Terry Stephen; and Honeycutt, James Reed, 3,857,309.

Celotex Corporation, The: *See—*
Sherman, Morton, 3,857,216.

Centre Technique des Industries de la Fonderie Wendel-Sidelor: *See—*
Chevriot, Roland F.; Le Maux, Gilles R.; and Gonon, Marcel P., 3,857,712.

Centre Technique du Cuir: *See—*
Barre, Jean-Gabriel, 3,857,129.

Cerrato, Rodolfo, to Fiat Societa per Azioni. Vaned rotor for gas turbines. 3,857,650, Cl. 416-218.000.

Cerruti, Ugo: *See—*
Glatti, Flaviano; Guariento, Manlio; and Cerruti, Ugo, 3,857,804.

Chabonat, Andre Marcel: *See—*
Baillet, Gerard Eugene; and Chabonat, Andre Marcel, 3,858,002.

Champion, Mary J.; Pottle, Clarence C.; and Gerber, Joseph H., 20% to Lee, Raymond, Organization, The. Box for electrical connections. 3,858,161, Cl. 339-122.00r.

Chang, Joseph K. Therapeutic agent derived from the bacterium Achromobacter stenohalis for treatment of canine infectious hepatitis. 3,857,935, Cl. 424-95.000.

Chapman, Charles C., to Phillips Petroleum Company. HF alkylation system utilizing alkylate stream reboil. 3,857,904, Cl. 260-683.480.

Chartet, Andre, to Societe Anonyme des Usines Chausson. Method for brazing radiators made of aluminum. 3,857,164, Cl. 29-483.000.

Chase, Earle Merritt: *See—*
Gerber, Heinz Joseph; Rich, Leonard G.; Webster, Ronald Bruce; Martino, Robert Louis; Chase, Earle Merritt; and D'Onofrio, Anthony, 3,857,525.

Chatmann, Harold M.: *See—*
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Chemetron Corporation: *See—*
Smith, Robert Lewis, 3,857,475.

Chemically Prestressed Concrete Corporation: *See—*
Mehta, Povindar K., 3,857,714.

Chemische Werke Huls Aktiengesellschaft: *See—*
Streck, Roland; and Weber, Heinrich, 3,857,825.

Chen, Di; and Otto, Gary N., to Honeywell Inc. Manganese bismuth thin films on reactive substrates. 3,857,734, Cl. 117-240.000.

Chevriot, Roland F.; Le Maux, Gilles R.; and Gonon, Marcel P., to Centre Technique des Industries de la Fonderie Wendel-Sidelor and Industries Chimiques de Voreppe. Method for increasing the mechanical resistance of foundry moulds or cores made from a self-hardening liquid sand. 3,857,712, Cl. 106-38.350.

Chevron Research Company: *See—*
Carey, Edward J., 3,857,794.
Cleveland, James D., 3,857,883.

Chiarino, Dario: *See—*
Bella, Davide Della; Veneziani, Carlo; Chiarino, Dario; and Teotino, Uberto Maria, 3,857,857.

Chioffi, Mario: *See—*
Bertozzi, Marcello; and Chioffi, Mario, 3,858,017.

Chipchase, Frank D., to International Multifoods Corporation. Tray turnover device. 3,857,477, Cl. 198-155.000.

Choay, Jean, to Choay S.A., mesne. Therapeutical composition of N-propionyl-epsilon-amino-caproic acid with method of treatment. 3,857,950, Cl. 424-319.000.

Choay S.A., mesne: *See—*
Choay, Jean, 3,857,950.

Christensen, Frank G.; and Wulff, Rafael T. Kick-starter mechanism for snowmobiles and the like. 3,857,377, Cl. 123-185.0bb.

Chrysler Corporation: *See—*
Douglas, Joseph W., 3,857,243.
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Kopera, Joseph J., Jr., 3,858,175.
Martin, Frank J.; and Holbrook, Rex R., 3,857,373.

Chugai Seiyaku Kabushiki Kaisha: *See—*
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Ciba-Geigy AG: *See—*
Martin, Henry; and Drabek, Jozef, 3,857,907.
Misslin, Raphael Charles, 3,857,487.
Schwander, Hansrudolf; Buhler, Arthur; and Hindermann, Peter, 3,857,864.

Ciba-Geigy Corporation: *See—*
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Cibie Projecteurs: *See—*
Ricard, Jacques, 3,858,040.

Cincinnati Milacron: *See—*
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Cities Service Oil Company: *See—*
Marcellis, Alphonso W.; and Peterson, Donald H., 3,857,791.
Prickril, William A., 3,857,805.

Claghorn, David A.: *See—*
Harbolt, Bruce A.; Claghorn, David A.; and Block, Delbert W., 3,857,499.

Clairol Incorporated: *See—*
Walter, Henry J., 3,858,029.

Clark, Daniel C., to Moog Inc. Servovalve with oscillation filter. 3,857,541, Cl. 251-30.000.

Clark, William E., to Federal-Mogul Corporation. Method of making tetrafluoroethylene sealing elements with hydrodynamic action. 3,857,156, Cl. 29-417.000.

Claudius Peters AG: *See—*
Eichinger, Frithjof, 3,857,554.

Clayson N.V.: *See—*
De Coene, Frans J. G. C., 3,857,400.

Cleveland, James D., to Chevron Research Company. N-chlorothio urea production. 3,857,883, Cl. 260-545.00r.

Clifton, Arthur E., to Armstrong Machine Works. Steam dispersion manifold. 3,857,514, Cl. 239-132.000.

Clontz, Raeford Warren: *See—*
Bradley, Walter Eugene; Clontz, Raeford Warren; Floyd, Terry Stephen; and Honeycutt, James Reed, 3,857,309.

CML-Macarr, Inc.: *See—*
Tomsky, Harry W.; and Parke, Harry G. (said Tomsky, Harry W., assor. t), 3,858,087.

Cobaugh, Robert Franklin: *See—*
Coller, James Ray; and Cobaugh, Robert Franklin, 3,858,153.

Cohen, Paul, to Subcom, Inc. Submarine missile launch system. 3,857,321, Cl. 89-1.810.

Cole, Allan R.: *See—*
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Cole, Robert C., to Halliburton Company. Sealant. 3,857,443, Cl. 166-295.000.

Colgate-Palmolive Company: *See—*
Baldwin, Marshall Glenn; and Miles, Gilbert Dwayne, 3,857,509.
Ratz, Robert Marie, 3,857,662.

Coller, James Ray; and Cobaugh, Robert Franklin, to AMP Incorporated. Low profile contact for insertion in printed circuit board. 3,858,153, Cl. 339-17.00c.

Colorado Refractories Corporation: *See—*
Mueller, Ferd A., 3,857,160.

Combustion Engineering, Inc.: *See—*
Jones, Thomas Alan; and Anthony, Andrew James, 3,857,599.

Commercial Decal, Inc.: *See—*
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Commissariat a l'Energie Atomique: *See—*

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Communications Satellite Corporation: *See—*
Golding, Leonard S.; and Garlow, Ronald K., 3,858,240.

Conard, Robert G., to United States of America, Army. Node suspended flexible rocket. 3,857,320, Cl. 89-1.808.

Concentrados Nacionais S.A.: *See—*
Schwartz, Haraldo Alberto; Moldenhauer, Odilio Lotario; and Greenman, Seymour Maurice, 3,857,978.

Confer, Leonard J.: *See—*
Hall, Donald D.; Confer, Leonard J.; and Lewis, James A., 3,857,295.

Consiglio Nazionale delle Ricerche: *See—*
Panzeri, Cesare, 3,857,280.

Constant, James Nickolas. Synthetic radiometer and system for identifying objects. 3,858,203, Cl. 343-6.5ss.

Continental Can Company, Inc.: *See—*
Howeler, Warren F.; Radosh, Lubi; Roth, Donald J.; Wright, Norbert L.; Grek, John W.; Godsted, Kent B.; and Geuss, Joseph A., 3,857,265.
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Continental-Wirt Electronics Corporation: *See—*
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Conzelmann, Gerhard: *See—*
Kugelmann, Adolf; Conzelmann, Gerhard; Henninger, Ewald; Meyer, Dieter; and Seiler, Hartmut, 3,858,177.

Cook, Forrest W.: *See—*
Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,857,908.

Cook Paint and Varnish Company: *See—*
Frizelle, Gerald L., 3,857,818.

Cook, William: *See—*
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Cooper, Edwin, & Company Limited: *See—*
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Coors Porcelain Company: *See—*
Moss, James R., 3,857,744.

Copeland, Claude T., to Dow Chemical Company, The. Method for forming a consolidated gravel pack in a subterranean formation. 3,857,444, Cl. 166-276.000.

Corbett, Paul M., to SCM Corporation. Electroslag refining flux compositions and process for making same. 3,857,702, Cl. 75-94.000.

Cormie, William Alexander: *See—*
Aitken, John Stuart; Green, Bernard Leslie; and Cormie, William Alexander, 3,857,290.

Corrado, Francesco: *See—*
Fiore, Leonardo; Nissim, Giorgio; and Corrado, Francesco, 3,857,759.

Costello, Dennis W. Method and apparatus for removing condenser tubes from surface condensers. 3,857,158, Cl. 29-427.000.

Cottis, Steve G.: *See—*
Economy, James; Cottis, Steve G.; and Nowak, Bernard E., 3,857,814.

Coulter, Earl E., to Babcock & Wilcox Company, The. Furnace seal. 3,857,344, Cl. 110-165.00r.

Coulter, Michael Oliver, to BP Chemicals Limited. Mercury recovery process. 3,857,704, Cl. 75-121.000.

Courtney, Henry R.: *See—*
Merrill, Roger F., Jr.; and Courtney, Henry R., 3,857,731.

Couto Martins, Jose V., to GTE Automatic Electric Laboratories Incorporated. Solid state relay. 3,858,057, Cl. 307-254.000.

Cowsert, Charles A., to Monarch Molding, Inc. Intercept connector suitable for use in a telephone system. 3,858,152, Cl. 339-17.00c.

Cox, Willis T. Orchard heater. 3,857,671, Cl. 431-352.000.

Crane, Burke J.; and Shean, Bertram M., to Rixson-Firemark, Inc. Electrical connector hinge. 3,857,625, Cl. 339-4.000.

CRC-Crose International Inc., mesne: *See—*
Edwards, Coy W.; and Laborde, Enos J., Jr., 3,858,026.

Creger, Paul L.: *See—*
Moersch, George W.; and Creger, Paul L., 3,857,884.

Crockett, Joseph T.: *See—*
Hackbarth, Lowell E.; and Crockett, Joseph T., 3,857,464.

Crow, William T.; Sands, Arthur E.; and Scrivner, Michael E., to United States of America, Atomic Energy Commission. Method for the manufacture of carbon foam. 3,857,913, Cl. 264-29.000.

Crowley, Richard P., to Abcor, Inc. Semipermeable membrane process and device employing an aminoethylated polymeric material as the semipermeable membrane. 3,857,782, Cl. 210-2.000.

Crowley, Richard P. Embossed plastic surface covering and method of preparing same. 3,857,915, Cl. 264-52.000.

Crozier, William Andrew; and Klein, Dieter Heinrich, to Alow Chemical Company, The. Process for preparing high solids content polymer lacquer dispersions. 3,857,808, Cl. 260-33.6ua.

Cubalchini, Ronald, to Hughes Aircraft Company. Catadioptric beamsplitter system. 3,858,046, Cl. 250-353.000.

Cummings, John P., to Honeywell Inc. Exhaustive electrolysis method for determination of oxygen demand. 3,857,761, Cl. 204-1.00t.

Cunningham, Ernest R., to Barr-Stalfort Company; Division Pittway Corporation. Aerosol container filling apparatus and method. 3,857,422, Cl. 141-3.000.

Curtin, Hoyt S. Pipe coupling. 3,857,588, Cl. 285-31.000.

Custer, Harry S.; and Oliver, Brian H., to Goodyear Tire & Rubber Company, The. Electrolytic cell including a flexible sheet covering the cell base. 3,857,775, Cl. 204-252.000.

Custom Materials, Inc.: *See—*
Brosseau, Alfred J., 3,857,397.

Cutler, David: *See—*
Delagi, Bruce A.; Stone, David L.; Cutler, David; and , 3,858,182.

CX Corporation: *See—*
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Cyprus Mines Corporation: *See—*
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Daikin Kogyo Co., Ltd.: *See—*
Kometani, Yutaka; Koizumi, Shun; and Suzuki, Takeshi, 3,857,807.

Dal Negro, Ruggero. Cutting implement for flat-bed sewing machine. 3,857,346, Cl. 112-130.000.

Daly, John P.: *See—*
Jones, Ronnie G.; and Daly, John P., 3,857,691.

Danfoss A/S: *See—*
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Lehmann, Kjeld, 3,858,090.
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Daniel, Michael R., to Westinghouse Electric Corporation. Acoustic surface wave television tuner. 3,858,118, Cl. 325-465.000.

Dankel, Douglas D.: *See—*
Aasland, Byron T.; Dankel, Douglas D.; and Franklin, Richard W., 3,857,521.

Darlington, William B.: *See—*
Du Bois, Donald W.; and Darlington, William B., 3,857,773.

Daubresse, Henri-Jean, to Decauville, S.A. Device for shifting a bucket pivoted to a vehicle. 3,857,607, Cl. 298-22.00j.

Daugirdas, Kristupas: *See—*
Reddy, Redreddy Sukumar; Roth, Carl W.; Rago, Richard A.; and Daugirdas, Kristupas, 3,857,197.

Davies, Terrence Ardern, to Square D Company. Electrical contact materials and methods of making the same. 3,857,706, Cl. 75-173.00r.

Davis, Paul Knight, to Pacific Roller Die Co., Inc. Pipe forming method. 3,857,159, Cl. 29-429.000.

Davis, William F., to Motorola, Inc. Solid state current divider. 3,858,062, Cl. 307-297.000.

Day, Donald E.: *See—*
Easterly, Donald O.; and Day, Donald E., 3,857,633.

Day, Lois I. Oxygenator support. 3,857,910, Cl. 261-65.000.

Dayco Corporation: *See—*
Hall, Donald D.; Confer, Leonard J.; and Lewis, James A., 3,857,295.

Days-Ease Home Products Corporation: *See—*
Levey, John S., 3,857,512.

De Coene, Frans J. G. C., to Clayson N.V. Combine harvester. 3,857,400, Cl. 130-27.00t.

De Marco, Fortunato: *See—*
Morelli, Morello; and De Marco, Fortunato, 3,857,894.

De Staat der Nederlanden, Ten deze Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie: *See—*
Spanjersberg, Arie Adriaan, 3,858,180.

De Vries, Hubert G., to Monolithic Systems Corporation. Automatic non-interrupting refresh technique. 3,858,184, Cl. 340-173.0dr.

Dean, Carl J., to Barry-Wright Corporation. Cable bushing apparatus. 3,857,136, Cl. 16-2.000.

Dean, Donald G.: *See—*
Pansky, Emil J.; and Dean, Donald G., 3,857,611.

Dear, Robert Ernest Arthur: *See—*
O'Brien, John Butler; Woolf, Cyril; and Dear, Robert Ernest Arthur, 3,857,957.

Decauville, S.A.: *See—*
Daubresse, Henri-Jean, 3,857,607.

Deelman, Gerardus Jacobus; and Kramer, Jacob, to N.V. Olvis. Fuse and method of making same. 3,858,142, Cl. 337-152.000.

Deering Milliken Research Corporation: *See—*
Lenderman, Alton L., 3,857,523.

Del Mar Engineering Laboratories: *See—*
Anderson, Donald L., 3,858,034.

Delagi, Bruce A.; Stone, David L.; Cutler, David; and , to Digital Equipment Corporation. Computer program protection means. 3,858,182, Cl. 340-172.500.

Delaval Turbine, Inc.: *See—*
Moore, Edward H., 3,857,277.

Dembovsky, Vladimir, to Vysoka Skola banska Ostrava. Plasma torch with axial supply of the stabilizing gas. 3,858,072, Cl. 313-32.000.

Demole, Edouard P. Flavored tobacco product. 3,857,403, Cl. 131-17.000.

den Toonder, Pieter, to Oak Industries Inc. Cable converter with phase lock loop techniques. 3,857,997, Cl. 178-5.100.

Denny, Robert B., to Adar, Inc. Radio teletype detector circuit. 3,858,117, Cl. 325-320.000.

Deno, Don W., to General Electric Company. Electric circuit breaker of the gas blast type. 3,858,015, Cl. 200-148.00b.

Denton, Bryce A., to General Electric Company. Appliance strain relief. 3,858,160, Cl. 339-107.000.

Deprez, Jacques: *See—*
Breuer, Wolfram; Deprez, Jacques; and Strum, Burthold, 3,857,760.

Derbyshire, Philip Edward: *See—*
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DESA Industries, Inc.: *See—*
Haupt, Eugene J.; and Shymkus, Robert M., 3,857,179.

Desarzens, Pierre; and Vogt, Jacques, to OMEGA Louis Brandt & Frere S.A. Apparatus for rapidly evaluating the rate of a timekeeper. 3,857,274, Cl. 73-6.000.

Desjarlais, Robert C. Substituted diresorcyl sulfide and sulfoxide compounds. 3,857,896, Cl. 260-609.00f.

Dettbarn, Arthur K.: *See—*
Dildy, Clell A., Jr.; and Dettbarn, Arthur K., 3,858,085.

Deutsch Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Hensel, Jorg; Schaefer, Hans; and Schreyer, Gerd, 3,857,886.

Devaul, Wayne E. Method and apparatus for loran reception. 3,858,216, Cl. 343-103.000.

Dewey, Charles N.: *See—*
Sommerfeld, Irwin H.; Morgan, Edmond L.; Allen, Ethan J.; and Dewey, Charles N., 3,857,383.

Di Tella, Vincenzo; and Rodighiero, Adolfo, to Tecnomare S.p.A. Underwater vehicle for laying underground cables and pipelines. 3,857,250, Cl. 61-72.400.

Diamond Reo Trucks, Inc.: *See—*
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Digital Equipment Corporation: *See—*
Delagi, Bruce A.; Stone, David L.; Cutler, David; and , 3,858,182.

Dildy, Clell A., Jr.; and Dettbarn, Arthur K., to United States of America, Navy. Digital raster generator. 3,858,085, Cl. 315-367.000.

Dischert, William Arnold, to RCA Corporation. Reel mounting apparatus. 3,857,526, Cl. 242-68.300.

Dlouhy, Ludek: *See—*
Stas, Bretislav; Dlouhy, Ludek; Siska, Lubomir; and Skrabis, Adolf, 3,858,167.

Dohany, Julius Eugene, to Pennwalt Corporation. Method of preparing high-quality vinylidene fluoride polymer in aqueous emulsion. 3,857,827, Cl. 260-92.100.

Dohse, Ruthard; Edeling, Curt; and Eisnmann, Josef, to Elektro-Thermit GmbH. Frog with closable wheel over-run. 3,857,536, Cl. 246-435.000.

Dolphin, Joseph R. Instant tire chains. 3,857,428, Cl. 152-241.000.

Domeshek, Sol. Method of enhancing the information legibility of multi-color graphic material. 3,857,709, Cl. 96-14.000.

Dominici, Antonio. Package forming device. 3,857,223, Cl. 53-124.00a.

Dominion Foundries and Steel Limited: *See—*
Prust, Michael Ward; and Glassman, Wayne Charles, 3,857,739.

D'Onofrio, Anthony: *See—*
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Dooley, James L., to McCulloch Corporation, mesne. Chain saw inertia clutch assembly. 3,857,180, Cl. 30-383.000.

Doorley, Richard B.; and Gaslevic, Emeric, to Trace, Inc. Portable tester for hydraulic power circuits. 3,857,282, Cl. 73-168.000.

Dorling, Anthony, to Ferro Manufacturing Corporation. Valve. 3,857,406, Cl. 137-315.000.

Dorman-Smith, Victor A. Process for production of asphalt. 3,857,716, Cl. 106-278.000.

Doss, Richard C.: *See—*
Brady, Donnie G.; Gray, Roy A.; and Doss, Richard C., 3,857,875.
Jones, Faber B.; Williams, Ralph P.; and Doss, Richard C., 3,857,876.

Douglas, Joseph W., to Chrysler Corporation. Hydraulic brake booster and system. 3,857,243, Cl. 60-538.000.

Dow Chemcial Company, The: *See—*
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Dow Chemical Company, The: *See—*
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Nowak, Robert M.; and Ginter, Thomas O., 3,857,812.
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Stain, S. Douglas, Jr.; Liu, Gordon Y. T.; and Hutchinson, Lloyd B., 3,857,813.
Wyss, Rudolf F.; and Grenley, Dallas G., 3,857,918.

Dowden, Dennis Albert; Shannon, Ian Robertson; and Spencer, Michael Staines, to Imperial Chemical Industries Limited. Treating hydrocarbons. 3,857,901, Cl. 260-668.00a.

Dower, Ethell J., to Warren Automatic Tool Company. Method and apparatus for detecting potentially dangerous conditions in a well bore during trips of the well string in and out of the well bore. 3,857,281, Cl. 73-155.000.

Drabek, Jozef: *See—*
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Drees, Jan M.; and Shipman, David, to Textron Inc. Multi-frequency helicopter vibration isolation. 3,857,534, Cl. 244-17.270.

Drelick, Arthur H.; and Bowman, Bobby R., to Johnson & Johnson. Methods of utilizing synthetic resin binder compositions. 3,857,728, Cl. 117-62.200.

Dresser Industries, Inc.: *See—*
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Bissell, Robert Donald; and Plavcan, Edward Joseph, 3,857,286.

Du Bois, Donald W., to PPG Industries, Inc. Recovery of electrolytic deposits of rhodium. 3,857,763, Cl. 204-10.000.

Du Bois, Donald W.; and Darlington, William B., to PPG Industries, Inc. Suppression of crevice corrosion in gasketed titanium crevices by the use of rubber compound gaskets substantially free of calcium. 3,857,773, Cl. 204-242.000.

Du Pont de Nemours, E. I., and Company: *See—*
Govindan, Tirunillayi S., 3,857,511.
Greene, Robin Nikolas; and Sohl, Edward, 3,857,826.
Haskell, Vernon C.; and Hecht, James L., 3,857,723.
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Ducasse, Joseph Christophe Victor, to Unice Machine Company. Oscillating anvil disintegrator. 3,857,520, Cl. 241-189.00r.

Dufresne-Henry Engineering Corporation: *See—*
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Dulux Australia Ltd.: *See—*
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Dunlop Holdings Limited: *See—*
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Duro-Dyne Corporation: *See—*
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Dyachkov, Alexandr Mikhailovich: *See—*
Selivanov, Anatoly Grigorievich; Titov, Dmitry Vladimirovich; and Dyachkov, Alexandr Mikhailovich, 3,857,417.

Dynamit Nobel AG: *See—*
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Easterly, Donald O.; and Day, Donald E., to Eastman Kodak Company. Projector function control mechanism. 3,857,633, Cl. 352-124.000.

Eastern Company, The: *See—*
Pastva, John V., Jr., 3,857,594.

Eastman Kodak Company: *See—*
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Eaton Corporation: *See—*
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Roggenkamp, George H.; and Ellis, Walter C., Jr., 3,858,137.

Ebata, Hiroyuki. End stop for sliding clasp fasteners. 3,857,141, Cl. 24-205.11f.

Ecker, Fred L. Apparatus for casting material using a collapsible structure. 3,857,540, Cl. 249-48.000.

Economy, James; Cottis, Steve G.; and Nowak, Bernard E., to Carbonundum Company, The. Branch aromatic polyesters and cross-linked derivatives thereof. 3,857,814, Cl. 260-47.0cp.

Edeling, Curt: *See—*
Dohse, Ruthard; Edeling, Curt; and Eisnmann, Josef, 3,857,536.

Edouart, Robert F. Adjustable length endless transmission belt. 3,857,294, Cl. 74-231.00j.

Edwards, Charles R.: *See—*
Roll, Ronald G.; Edwards, Charles R.; Moore, Robert C.; Wagner, George D.; and Burek, Ronald K., 3,858,217.

Edwards, Coy W.; and Laborde, Enos J., Jr., to CRC-Crose International Inc., mesne. Method for internally welding pipe joints. 3,858,026, Cl. 219-137.000.

Edwards, Reginald H., to Dunlop Limited. Tire and wheel assemblies. 3,857,429, Cl. 152-379.000.

Eggert, Noel B., to Owens-Illinois, Inc. Molded plastic container secondary operations machine. 3,857,648, Cl. 408-17.000.

Eguchi, Osamaru: *See—*
Fukai, Masakazu; Fujiwara, Shinji; Serizawa, Hiroyuki; Eguchi, Osamaru; and Kuramoto, Yukimasa, 3,858,074.

Eichinger, Frithjof, to Claudius Peters AG. Steel conversion. 3,857,554, Cl. 266-34.00t.

Eisai Co., Ltd.: *See—*
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Eisnmann, Josef: *See—*
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Ekeland, Terje: *See—*
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El Taher, Mohammed A.: *See—*
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Electro-Petroleum, Inc., mesne: *See—*
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Electronic Memories & Magnetics Corporation: *See—*
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Elfman, Allan M.: *See—*
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Ellin, Seymour; and Kee, Richard C., to Polaroid Corporation. Adapter apparatus for flash firing system. 3,858,227, Cl. 354-145.000.

Ellis, Walter C., Jr.: *See—*
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Elwood, Albert A.; and Patterson, James. Cryogenic control valve. 3,857,255, Cl. 62-293.000.

Emerson Electric Co.: *See—*
Htsui, John S. C., 3,858,098.

Emery Industries, Inc.: *See—*
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Endo, Junji: *See—*

Komatsu, Noboru; Arai, Tohru; Obayashi, Mikio; and Endo, Junji, 3,857,725.
Endo, Shigeru, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Apparatus for severing continuous wire to predetermined length and delivering severed wire to conveyor. 3,857,313, Cl. 83-277.000.
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Szucs, Laszlo; Tasnadi, Csaba; and Lindner, Istvan, 3,857,911.
Engdahl, Jean, to Societe Suisse pour l'Industrie Horlogere Management Swevices S.A. Method of making a quartz bar resonator. 3,857,146, Cl. 29-25.350.
Engel, Wolfhard: *See—*
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Engelhardt, Bjorn H., to Raytheon Company. Folded push-pull ampifier. 3,858,119, Cl. 330-15.000.
Engelhardt, Gunther: *See—*
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Englund, John Sven, to Hugin Kassaregister AB. Position selecting device. 3,858,035, Cl. 235-156.000.
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Epstein, Howard C., to Becton Dickinson Electronics Company. Annular, 3mm class-piezoelectric crystal transductor. 3,858,065, Cl. 310-9.500.
Ercoli, Alberto; Gardi, Rinaldo; and Vitali, Romano, to Warner-Lambert Company. Pharmaceutical compositions and use of prednisolone 17-benzoate. 3,857,941, Cl. 424-243.000.
Erich, Nagel: *See—*
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Erna, Plasser; Josef, Theurer; and Franz, Eglseer. Mobile track survey apparatus. 3,857,183, Cl. 33-174.00r.
Ernst, James E. Row centering guide control device for bush bean harvester. 3,857,455, Cl. 180-79.20r.
Ersfeld, Heinrich: *See—*
Knipp, Ulrich; Boden, Heinrich; Ersfeld, Heinrich; Schneider, Walter; and Moeres, Reiner, 3,857,550.
Esch, Robert E., to Bendix Corporation, The. Inch-metric read-out for a measuring system. 3,858,033, Cl. 235-92.0pl.
Esser, Paul, to Meyer, Roth & Pastor Maschinenfabrik GmbH. Method and apparatus for manufacturing wire sections with relieved ends. 3,857,311, Cl. 83-51.000.
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Morin, Louis F.; and McNeil, Edgar L., 3,857,415.
Evers, William J.; and Sieczkowski, Joseph, to International Flavors & Fragrance Inc. Flavoring with an oxocyclic pyrimidine. 3,857,972, Cl. 426-65.000.
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F. Hoffmann-La Roche & Co., Aktiengesellschaft: *See—*
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Fader, John H.; Keijzer, Johan H.; and Versehoore, Reinhart A., to Monroe Belgium N.V. Shock absorber testing apparatus. 3,857,276, Cl. 73-11.000.
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Fanshaw, William Joseph; and Safir, Sidney Robert, to American Cyanamid Company. Cyclopropyl 1,2,4-oxadiazolyldiazines. 3,857,843, Cl. 260-256.40r.
Fantoni, Marco, to Tecno S.p.A. Mobili e forniture per Arredamento. Arm for a chair. 3,857,605, Cl. 297-162.000.
Farbwerke Hoechst Aktiengesellschaft vormals Lucius: *See—*
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Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
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Faucette, Reese E. Energy recovery and conversion system. 3,857,244, Cl. 60-641.000.
Faucheux, Pierre, to Etablissement Fresa. Method of assembling a framework. 3,857,150, Cl. 29-155.00r.
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Federal-Mogul Corporation: *See—*
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Feeny, Richard William, to American Cyanamid Company. 1,2-Dimethyl-3,5-diphenylpyrazolium salt and 3,5-dibromo-4-hydroxybenzonitrile herbicidal compositions. 3,857,692, Cl. 71-92.000.
Feess, Erich; Roth, Kurt; and Trapp, Gunther, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the printing and continuous fixing of disperse dyestuffs and polyester, cellulose-triacetate, cellulose-2 1/2-acetate and mitures. 3,857,676, Cl. 8-21.00c.
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Felix, Henry T. Impact ripper shank. 3,857,609, Cl. 299-37.000.
Fell, Ferol S.: *See—*
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Ferro Manufacturing Corporation: *See—*
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Fiat Societa per Azioni: *See—*
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Fich, Sylvan: *See—*
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Findeisen, Kurt; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the production of orthocarbonic acid esters. 3,857,897, Cl. 260-613.00r.
Fink, Roger H., to Akzona Incorporated. Continuous yarn winding apparatus. 3,857,522, Cl. 242-18.00a.
Fiore, Leonardo; Nissim, Giorgio; and Corrado, Francesco, to Mintecatini Edison S.p.A. Process for purifying 1,3-dioxolane by treatment with NH_3 and distillation with cyclohexane. 3,857,759, Cl. 203-29.000.
Fischer & Porter Co.: *See—*
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Fisher & Paykel Limited: *See—*
Grausch, Wolfgang Dieter; and O'Hare, David Hugh, 3,857,745.
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Flumm, Paul T.; and Harris, Vernon B., to Robertshaw Controls Company. Digital timer means and method of making the same. 3,857,234, Cl. 58-21.140.
Flynn, Joseph C.; and Panas, Walter, to Wheaton Industries. Injection-blow molding machine. 3,857,660, Cl. 425-242.00b.
FMC Corporation: *See—*
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Fordertechnik Steicher GmbH: *See—*
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Forsthoff, Ernst Ludwig; and Vogl, Rudolf, to Lever Brothers Company. Hair colourants. 3,857,674, Cl. 8-10.200.
Foseco Trading A.G.: *See—*
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Foster, Edwin E. Support stand for a racer-type bicycle. 3,857,585, Cl. 280-294.000.

Foster Grant Co., Inc.: *See—*
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Foster, Jack B.; and Antes, Jack E., to Super Seer Corporation. Calculating inclinometer for levelling recreation vehicles. 3,857,188, Cl. 33-388.000.

Foster, Leigh Curtis, to Itek Corporation. High angular resolution sensor. 3,858,201, Cl. 340-347.00p.

Fowler, Lawrence S. Protective shield for coin box locks and key therefor. 3,857,264, Cl. 70-423.000.

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Fox, Michael Frank: *See—*
Saunders, Peter Anthony; Fox, Michael Frank; Fagan, Anthony Francis; and Derbyshire, Philip Edward, 3,857,790.

Fox, Richard B. Device for inhibiting vibratory roof noise. 3,857,457, Cl. 181-33.00a.

Frach, Werner; and Janke, Bernhard. Seal for a sliding door, a sliding window or the like. 3,857,199, Cl. 49-477.000.

Frank, Edmund, to Packard Instrument Company, Inc. Flexible containers for liquid sample spectrometry and methods and apparatus for forming, filling and handling the same. 3,857,485, Cl. 206-305.000.

Frankel, Sylvan A., to Richards Manufacturing Company. Universal clavicle splint. 3,857,388, Cl. 128-87.00r.

Franklin, Richard W.: *See—*
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Franz, Eglseer: *See—*
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Frappe, Pierre, to Verdol S.A. Recognition of colors by photo-sensitive means. 3,858,044, Cl. 250-226.000.

Frass, Erner, to Kalle Aktiengesellschaft. Light-sensitive copolymers, a process for their manufacture and copying compositions containing them. 3,857,822, Cl. 260-78.50t.

Freeman, Francis R.; and Metrailer, Joseph F., to Amoco Production Company. Vibrator performance monitor. 3,858,170, Cl. 340-16.00c.

Freeman Supply Company, The: *See—*
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Freiser, Marvin J., to International Business Machines Corporation. Fast turn-off nematic liquid optical devices. 3,857,629, Cl. 350-160.0lc.

Frey, Dean Rudisill: *See—*
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Friedl, Wendel M.; Miles, Robert A.; Allen, John W.; and Waiwood, William P., to Johnson Diversified, Inc. Pulse-width modulation control system and discriminator therefor. 3,858,116, Cl. 325-37.000.

Friedman, Arthur L., to Electronic Memories & Magnetics Corporation. Multi-bit core read out system. 3,858,190, Cl. 340-174.0zb.

Friedman, Arthur S. Book indexing means. 3,857,587, Cl. 283-42.000.

Friedman, Sol. Stop-action sports game. 3,857,565, Cl. 273-85.00r.

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Johnson, Russell L.; Peerenboom, Robert J.; Fries, Donald M.; Kaczmarzyk, Leonard M.; and Buss, Arnold J., 3,857,395.

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Fuji Oil Co., Ltd.: *See—*
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Fukai, Masakazu; Fujiwara, Shinji; Serizawa, Hiroyuki; Eguchi, Osamaru; and Kuramoto, Yukimasa, to Matsushita Electric Industrial Co., Ltd. Photoelectric transducer element including a heterojunction formed by a photo electric transducer film and an intermdiate film having a larger energy gap than the photoelectric transducer film. 3,858,074, Cl. 313-94.000.

Funaki, Hidefumi: *See—*
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Gabler, Robert C., Jr.; Amey, Earle B.; Dunning, Beverly W., Jr.; Goldsmith, Carl E.; and Leavenworth, Howard W., Jr., to United States of America, Interior. Recovery of copper from chalcopyrite ore concentrates. 3,857,767, Cl. 204-108.000.

GAF Corporation: *See—*
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Gallouin, Francois: *See—*
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Ganssmantel, Horst, to Licentia Patent-Verwaltungs G.m.b.H. Circuit arrangement for synchronizing pulse bursts. 3,858,007, Cl. 179-15.0bs.

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Gardi, Rinaldo: *See—*
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Gardner, Gary A.: *See—*
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Gardner, Richard A.; and Wilcox, David L., to International Business Machines Corporation. Mullite package for integrated circuit devices. 3,857,923, Cl. 423-327.000.

Garlow, Ronald K.: *See—*
Golding, Leonard S.; and Garlow, Ronald K., 3,858,240.

Gartner, Klaus W. Pick resistant cylinder lock. 3,857,263, Cl. 70-364.00a.

Garzia, Aldo, to Instituto Chemioterapico Italiano S.p.A. Prophylaxis and treatment of cardiac disorders. 3,857,949, Cl. 424-317.000.

Gaslevic, Emeric: *See—*
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Gass, Ernst: *See—*
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Gass, Ernst, to Sick, Erwin, Optik-Elektronik, Firma. Optical measuring apparatus. 3,857,641, Cl. 356-207.000.

Gassner, Georg Gustav: *See—*
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Gatzi, Walter, to Matallbau AG Zurich. Foldable shutter. 3,857,433, Cl. 160-172.000.

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Gee, James E.; and Stedman, Robert N., to Caterpillar Tractor Company. Auger scraper and ejector system. 3,857,190, Cl. 37-8.000.

Gehrmann, Klaus: *See—*
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Gelardi, Joseph T., to American Technical Industries, Inc. Apparatus for forming loops from springs. 3,857,421, Cl. 140-71.00r.

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General Electric Company: *See—*
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General Foods Corporation: *See—*
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George, Robert D.; Banner, Alvin D.; and Morrison, George W., to Mechaneer, Inc. Apparatus and method for winding armatures. 3,857,172, Cl. 29-597.000.

Georgia-Pacific Corporation: *See—*
Briggs, William Scott, 3,857,830.

Gerat, Jean, to Societe Nouvelle de Roulements. Method of manufacturing bearing races by rolling. 3,857,147, Cl. 29-148.40r.

Gerber, Heinz Joseph; Rich, Leonard G.; Webster, Ronald Bruce; Martino, Robert Louis; Chase, Earle Merritt; and D'Onofrio, Anthony, to Gerber Scientific Instrument Company, The. Plotting system. 3,857,525, Cl. 242-57.100.

Gerber, Joseph H.: *See—*
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Gerber Scientific Instrument Company, The: *See—*
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Giardini, Emidio D., to Rockwell International Corporation. Modular rack assembly. 3,857,494, Cl. 211-177.000.

Gibble, Walter P.; and Reid, Edward J., to Hunt-Wesson Foods, Inc. Process for improving the thermal stability of soybean oil. 3,857,866, Cl. 260-420.000.

Gibson, Richard D.; and Whelan, Robert D., to General Instrument Corporation. Combined VHF and UHF display system. 3,857,361, Cl. 116-124.400.

Gibson, Troy W. Rotary internal combustion engine. 3,857,371, Cl. 123-44.00r.

Giesen, Gerardus Johannes, to Beondu A.G. Boiler. 3,857,367, Cl. 122-367.00r.

Gilb, Tyrell T., to Simpson Manufacturing Co., Inc. Truss joists having edge pin connectors. 3,857,218, Cl. 52-644.000.

Gill, Edward William; Vincent, Derek Arthur; and Peace, John, to Moore Business Forms, Inc. Web handling apparatus. 3,857,557, Cl. 270-52.500.

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Gilmore, Ralph W. Gravity-buoyancy motor. 3,857,242, Cl. 60-495.000.

Gilpin, William Cecil; Bown, Barry; and Hedley, Christopher Stelling, to Steetley (Mfg) Limited. Lime composition for basic oxygen steelmaking process. 3,857,698, Cl. 75-24.000.

Gilster, William James. Wheeled carrier for sailing vessel. 3,857,128, Cl. 9-1.00t.

Gimeneazara, Isidro. Device for practicing gymnastics. 3,857,563, Cl. 272-58.000.

Ginter, Thomas O.: *See—*
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Giordano, Angelo A.: *See—*
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Giordano, Raymond: *See—*
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Porta, Paolo Della; Giorgi, Tiziano A.; Cantaluppi, Angelo; Ferrario, Bruno; and Mantalenti, Paolo, 3,857,680.

Girguis, Sobhy Labib, to Uni-Cardan A.G. Multiple universal joint. 3,857,256, Cl. 64-21.000.

Girsh, David C.: *See—*
Nohava, Theodore J.; and Girsh, David C., 3,857,584.

Gittleman, Jonathan Isaac; and Zappulla, Lawrence Matthew, to RCA Corporation. Tuneable thin film inductor. 3,858,138, Cl. 336-136.000.

Gittos, Maurice Ward: *See—*
Wiggins, Leslie Frederick; James, John William; and Gittos, Maurice Ward, 3,857,844.

Giudicelli, Don Pierre Rene Lucien: *See—*
Najer, Henry; Manoury, Philippe Michel Jacques; Fernand, Andre Pierre; and Giudicelli, Don Pierre Rene Lucien, 3,857,945.

Glacier Industries, Inc.: *See—*
Wight, Edward M., 3,857,252.

Glassman, Wayne Charles: *See—*
Prust, Michael Ward; and Glassman, Wayne Charles, 3,857,739.

Glatti, Flaviano; Guariento, Manlio; and Cerruti, Ugo, to Montecatini Edison S.p.A. Thermoplastic film for controlling plant growth. 3,857,804, Cl. 260-23.00x.

Glikin, Paul Edgar; Miracki, Zdzislav Stanislav; and Phillips, Ronald, to Simms Group Research & Development Limited. Liquid fuel injection pumping apparatus. 3,857,374, Cl. 123-139.0ap.

Global Environmental Technologist Corporation: *See—*
Keller, Howard F., 3,857,770.

Glockler, Joseph A., Jr.: *See—*
Griffing, Brandt M.; and Glockler, Joseph A., Jr., 3,858,071.

Godsted, Kent B.: *See—*
Howeler, Warren F.; Radosh, Lubi; Roth, Donald J.; Wright, Norbert L.; Grek, John W.; Godsted, Kent B.; and Geuss, Joseph A., 3,857,265.

Godwin, George A.; and Wagle, William E., to Sarkes Tarzian, Inc. Timer. 3,857,293, Cl. 74-118.000.

Goetze, Arnold A.: *See—*
Fashfellow, George H.; Fauntleroy, Dort; and Goetze, Arnold A., 3,857,297.

Goldberg, Gerald M.: *See—*
Parke, Donald P.; Priester, Willis M.; Scheidler, Stuart P.; and Goldberg, Gerald M., 3,858,208.
Scheidler, Stuart P.; Goldberg, Gerald M.; Sidlo, Richard; King, Donald L.; and Gebhardt, Richard A., 3,858,206.

Goldfarb, Adolph E.; and Benkoe, Erwin. Disc projection apparatus. 3,857,564, Cl. 273-85.00f.

Goldfarb, Adolph E.; and Benkoe, Erwin. Bumper pool game with impact responsive actuation-deactuation structure for marking and unmarking of selected bumper elements. 3,857,567, Cl. 273-123.00a.

Goldfarb, Adolph E.; and Benkoe, Erwin. Dexterity game with indicia boards and play pieces matching the indicia. 3,857,569, Cl. 273-135.00a.

Goldgarb, Adolph E. Toy vehicle and track set. 3,857,193, Cl. 46-202.000.

Goldhofer, Alois, to Tewi-Pat Anstalt. Apparatus for storing and stacking vehicles. 3,857,500, Cl. 214-16.1cf.

Goldie, Harry: *See—*
Nelson, Theodore M.; and Goldie, Harry, 3,858,125.

Golding, Leonard S.; and Garlow, Ronald K., to Communications Satellite Corporation. Reduced rate sampling process in pulse code modulation of analog signals. 3,858,240, Cl. 358-13.000.

Goldsby, Arthur F.; Anand, Satish K.; and Haberl, Frank J., to Martin Marietta Corporation. Monitoring system. 3,858,181, Cl. 340-150.000.

Goldsmith, Carl E.: *See—*
Gabler, Robert C., Jr.; Amey, Earle B.; Dunning, Beverly W., Jr.; Goldsmith, Carl E.; and Leavenworth, Howard W., Jr., 3,857,767.

Gondo Hisashi; Takechi, Hiroshi; Kawano, Tsuyoshi; Namba, Kazuo; Masui, Hiroaki; Ozaki, Koji; Uchida, Shunichi; and Sakurai, Koichi, to Nippon Steel Corporation. Precipitation hardening high strength cold rolled steel sheet and method for producing same. 3857,740, Cl. 148-12.00f.

Gonon, Marcel P.: *See—*
Chevriot, Roland F.; Le Maux, Gilles R.; and Gonon, Marcel P., 3,857,712.

Gonzales, J. Tim, to Mallory, P. R., & Co., Inc. Placement robot providing a vertical and horizontal displacement output. 3,857,496, Cl. 214-1.0bt.

Gonzalez, Cesar Poveda. Mobile anti-glare shield for vehicles. 3,857,630, Cl. 350-276.00r.

Goodman, David S.; and Prow, Harold J., Jr., to International Telephone and Telegraph Corporation. Printed circuit board connector. 3,858,163, Cl. 339-176.00m.

Goodnight, Hershel E.: *See—*
Reed, Robert D.; and Goodnight, Hershel E., 3,857,672.

Goodyear Tire & Rubber Company, The: *See—*
Custer, Harry S.; and Oliver, Brian H., 3,857,775.
Milliken, Paul E., 3,857,209.

Gorder, Clarence V. Electrode holder for electric soldering machines. 3,858,023, Cl. 219-85.000.

Gordon, Alan; and Phelps , Michael W., to United States of America, Navy. Device for solving the sonar equation. 3,857,634, Cl. 355-18.000.

Gordon, Paul, to Newport Pharmaceuticals, Inc. Inosine derivatives. 3,857,940, Cl. 424-180.000.

Gorog, Istvan, to RCA Corporation. Color encoded hologram playback apparatus. 3,858,239, Cl. 358-2.000.

Gott, Hans; Ritter, Klaus; Ritter, Josef; and Ritter, Gerhard, to EVG Intwicklungs- und Verwertungs-Gesellschaft m.b.H. Bending machine for rod or strip material. 3,857,271, Cl. 72-383.000.

Gould, Francis E.: *See—*
Shepherd, Thomas H.; and Gould, Francis E., 3,857,932.

Govindan, Tirunillayi S., to Du Pont de Nemours, E. I., and Company. Process for the spray application of aqueous paints by utilizing an air shroud. 3,857,511, Cl. 239-11.000.

Gower, Roger L. Connector hook having arcuate channel on face of flared head. 3,857,238, Cl. 59-93.000.

Grace, Richard C.; and Van Luik, Frank W., Jr., to Environment/One Corporation. Anti-siphon and pump priming for sewage grinder pump. 3,857,517, Cl. 241-36.000.

Grace, W. R., & Co.: *See—*
Isaacs, Philip K.; and Paton, Alexander C., 3,857,806.

Grace, W. R., & Company: *See—*
Abdo, Kamal M.; and Cahilly, Glenn M., 3,857,971.

Graff, Allan H.; and Reggio, Richard A., to Warner-Lambert Company. Method for forming center-filled chewing gum. 3,857,963, Cl. 426-3.000.

Grandy, Andrew J. Ammunition and weapon systems. 3,857,339, Cl. 102-38.000.

Grantham, Le Roy F.; and Yosim, Samuel J., to United States of America, Health, Education and Welfare. Recovery of lithium carbonate. 3,857,920, Cl. 423-208.000.

Grausch, Wolfgang Dieter; and O'Hare, David Hugh, to Fisher & Paykel Limited. Method of covering articles with leather. 3,857,745, Cl. 156-83.000.

Gravelle, Noel D.: *See—*
Macomber, Bennie D.; and Gravelle, Noel D., 3,858,207.

Grawey, Charles E.; and Caterpillar Tractor Company. Split chevron track shoes for track belts. 3,857,617, Cl. 305-38.000.

Gray, Robert C.: *See—*
Amdahl, Gene M.; Tobias, Richard J.; and Gray, Robert C., 3,858,183.

Gray, Roy A.: *See—*
Brady, Donnie G.; Gray, Roy A.; and Doss, Richard C., 3,857,875.

Gray, Samuel A. Push-pull linear motor. 3,858,135, Cl. 335-123.000.

Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., to Hooker Chemical Corporation. Friction particle for brake lining. 3,857,811, Cl. 260-38.000.

Grebe, Ludwig, to Kramer & Grebe KG Maschinen und Moldellfabrik. Packing machine. 3,857,222, Cl. 53-112.00a.

Green, Bernard Leslie: *See—*
Aitken, John Stuart; Green, Bernard Leslie; and Cormie, William Alexander, 3,857,290.

Green, George: *See—*
Baker, Alan Stuart; Green, George; and Waters, Julian Alfred, 3,857,810.

Green, Jeffrey Alan; Magid, Louis; and Sleezer, Paul Edward, to Hoffmann-La Roche Inc. Chewable sodium-free vitamin C tablets. 3,857,939, Cl. 424-157.000.

Greenberg, Seymour. Folding table. 3,857,343, Cl. 108-133.000.

Greene, Robin Nikolas; and Sohl, Edward, to Du Pont de Nemours, E. I., and Company. Fluid, hydroxyl-terminated ethylene/propylene copolymers. 3,857,826, Cl. 260-88.20r.

Greenman, Seymour Maurice: *See—*
Schwartz, Haraldo Alberto; Moldenhauer, Odilio Lotario; and Greenman, Seymour Maurice, 3,857,978.

Greer Hydraulics, Inc.: *See—*
Zahid, Abduz, 3,857,413.

Gregg, Joseph, Jr.; and Hannigan, John Paul, to Jab Company, Inc. Audio alarm system. 3,858,195, Cl. 340-311.000.

Gregoire, Clyde G. Rotary cutter. 3,857,314, Cl. 83-346.000.

Gregory, Philip L., to Raytheon Company. Beam lead semiconductor package. 3,857,993, Cl. 174-52.00s.

Greig, John H.: *See—*
Scarpino, John J.; and Greig, John H., 3,858,088.

Grek, John W.: *See—*
Howeler, Warren F.; Radosh, Lubi; Roth, Donald J.; Wright, Norbert L.; Grek, John W.; Godsted, Kent B.; and Geuss, Joseph A., 3,857,265.

Grenley, Dallas G.: *See—*
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Grey, Donald M.; and Butler, Lee D., to Sperry Rand Corporation. Bale wagon. 3,857,498, Cl. 214-8.50a.

Grifi, Gary J.: *See—*
Johns, Burton A., 3,857,342.

Griff, John K.: *See—*
Johns, Burton A., 3,857,342.

Griffin, Auburn K., Jr., to Westinghouse Electric Corporation. Induction volts-squared hour meter. 3,858,115, Cl. 324-137.000.

Griffing, Brandt M.; and Glockler, Joseph A., Jr., to International Business Machines Corporation. High frequency, low inductance generator. 3,858,071, Cl. 310-266.000.

Griffiths, Philip John, to Actric Limited. Heat treatment furnace and method. 3,857,553, Cl. 266-5.00r.

Griner, Arthur J., to Nabisco, Inc. Method of and apparatus for making wafers. 3,857,331, Cl. 99-373.000.

Grob, Russel Walter, to Caterpillar Tractor Company. DC power converter. 3,858,104, Cl. 321-2.000.

Grosshauser, Anton: *See—*
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Gruett, Monte D.: *See—*
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GSW Electric Specialty Company: *See—*
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GTE Automatic Electric (Canada) Ltd.: *See—*
Lighthall, John T.; and Toy, Harry A., 3,858,187.

GTE Automatic Electric Laboratories Incorporated: *See—*
Couto Martins, Jose V., 3,858,057.
Higashide, Carlos S., 3,858,010.
McLaughlin, Donald W.; and Makantassis, Panayote D., 3,858,179.
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GTE Laboratories Incorporated: *See—*
Pappalardo, Romano G.; and Ahmed, Samir A., 3,857,793.

GTE Sylvania Incorporated: *See—*
Anderson, Warren A.; Labadini, William M.; and Passmore, Edmund M., 3,858,086.
Budd, Raymond A., 3,858,134.
Kim, Tat K.; Laferty, John M.; Macinnis, Martin B.; Patton, James C.; and Quatrini, L. R., 3,857,928.
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Rehkopf, Charles; and Speigel, Kenneth, 3,858,083.
Rehkopf, Charles H.; and Speigel, Kenneth, 3,858,081.
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Guariento, Manlio: *See—*
Glatti, Flaviano; Guariento, Manlio; and Cerruti, Ugo, 3,857,804.

Gudmestad, Ragnar, to Artos Engineering Company. Cable cutting and stripping machine. 3,857,306, Cl. 81-9.510.

Guier, William. Drilling apparatus. 3,857,450, Cl. 175-85.000.

Guilbault, George G.; Shu, Frank R.; and Von Storp, Henning, to United States of America, Environmental Protection Agency. Ion exchange membrane for measuring orthophosphate. 3,857,777, Cl. 204-296.000.

Guinn, Paul A.: *See—*
Burkert, Edward F.; and Guinn, Paul A., 3,857,435.

Gulf & Western Industries, Inc.: *See—*
Hulterstrum, Harold D., 3,857,467.

Gulf Research & Development Company: *See—*
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Gundlach, Robert William, to Xerox Corporation. Adhesive paper pick-off system. 3,857,560, Cl. 271-174.000.

Gurtler, Richard Warren; and Zwernemann, Ross Wayne, to Motorola, Inc. Polycrystalline silicon pressure sensor. 3,858,150, Cl. 338-2.000.

Gustafson, William Roy. Hydroforming petroleum fractions in gas phase using shaped catalyst particles. 3,857,780, Cl. 208-139.000.

Gutierrez, Miramon; and Gutierrez, Ricardo. Golf putting training device. 3,857,570, Cl. 273-186.00c.

Gutierrez, Ricardo: *See—*
Gutierrez, Miramon; and Gutierrez, Ricardo, 3,857,570.

Guttman, Murray. Model auto-giro. 3,857,194, Cl. 46-244.00b.

Gutzwiller, Juerg Albert; and Uskokovic, Milan Radoje, to Hoffman-La Roche Inc. Processes and intermediated for quinine, quinidine, isomers and derivatives thereof. 3,857,837, Cl. 260-240.00r.

Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. [1-Benzoyl-3(R)-alkyl-4(R)-piperidyl-methyl]-oxo- (6,7 substituted-4 quinolyl) propionic acid. 3,857,846, Cl. 260-287.000.

Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. 6,7 Substituted 4 (3[3(R)alkyl, 4(S) piperidyl]-z-oxopropyl) quinoline and racemates. 3,857,847, Cl. 260-287.000.

Gyromat Corporation, Inc.: *See—*
Wiggins, Richard F., 3,857,513.

Gyugyi, Laszlo, to Westinghouse Electric Corporation. Static power conversion arrangement and method. 3,858,105, Cl. 321-27.00r.

Haas, Gerhard J.: *See—*
Feldman, Jacob R.; Haas, Gerhard J.; Lugay, Joaquin C.; and Wiener, Claric J., 3,857,966.

Haas, Gerhard Julius; and Lugay, Joaquin Castro, to General Foods Corporation. Method of preparing animal food of increased palatability. 3,857,968, Cl. 426-33.000.

Haberl, Frank J.: *See—*
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Hackbarth, Lowell E.; and Crockett, Joseph T., to Huber, J. M., Corporation. Alkali metal alumino silicates, methods for their production and compositions thereof. 3,857,464, Cl. 186-288.00b.

Hadley, Belva D. Bedclothes. 3,857,124, Cl. 5-334.00r.

Hadzeriga, Pablo: *See—*
Hazen, Wayne C.; and Hadzeriga, Pablo, 3,857,919.

Hafele, Robert X., to Ethyl Development Corporation. Plastic container. 3,857,506, Cl. 215-31.000.

Hagemeyer, Hugh John, Jr.; and Wright, Howard Nolan, Jr., to Eastman Kodak Company. Continuous process for the preparation of 2,5-dimethyl-2,4-hexadiene. 3,857,903, Cl. 260-681.000.

Hagen, Magnus F.; and Jordan, Fred H. Synchronization and precision sequenching of ball retainer relationship to one-half of slide movement. 3,857,618, Cl. 308-3.800.

Hagenbach, Robert J.: *See—*
Madrid, Robert W.; and Hagenbach, Robert J., 3,857,792.

Hager, Hans Jacob, to Hoffmann-La Roche Inc. Latex polymer reagents for diagnostic tests. 3,857,931, Cl. 424-12.000.

Halasz, Istvan; and Sebestian, Imrich. Process for preparing silica particles. 3,857,924, Cl. 423-338.000.

Hall, Donald D.; Confer, Leonard J.; and Lewis, James A., to Dayco Corporation. Trapezium power transmission belt. 3,857,295, Cl. 74-234.000.

Hallerback, Stig Lennart, to SKF Industrial Trading and Development Company N.V. Bearing centering structure for rotary electric apparatus. 3,858,070, Cl. 310-90.000.

Halliburton Company: *See—*
Cole, Robert C., 3,857,443.

Halling, Horace P.: *See—*
Taylor, Dudley D.; and Halling, Horace P., 3,857,572.

Hamada, Shinji: *See—*
Takiguchi, Sunichi; Satoyoshi, Yasuhiko; Hamada, Shinji; Nakamura, Takeshi; Koba, Sadaaki; and Shimoda, Noboru, 3,857,153.

Hamilton, Earle M.; and Cook, William. Centrifugal filter. 3,857,687, Cl. 55-337.000.

Hammann, Ingeborg: *See—*
Kuhle, Engelbert; Siegle, Peter; Behrenz, Wolfgang; and Hammann, Ingeborg, 3,857,860.

Hammond, James Woodrow; and Loomis, Phillip Eugene, to AMP Incorporated. Apparatus for positioning an end of a bendable wire-like article at a predetermined location on another article. 3,857,154, Cl. 29-203.00p.

Hammond, John W., to Briddell, Charles D.; d/b/a C.D.B. Company. Recoverable underwater acoustic beacon. 3,858,166, Cl. 340-5.00r.

Hampl, Franz, to Jaeger, Erich. Direct indicating devices for measuring respiratory resistance. 3,857,385, Cl. 128-2.080.

Hanabusa, Kazuo: *See—*
Inomata, Mamoru; and Hanabusa, Kazuo, 3,857,902.

Hanchett, Leland J., Jr. Electric system including two loads arranged remotely from each other. 3,858,094, Cl. 317-137.000.

Hancock, John T., to Texas Instruments Incorporated. Time-delay relay and method of assembling same. 3,858,140, Cl. 337-88.000.

Handley, Alan Roy. Shear cutter. 3,857,316, Cl. 83-644.000.

Handy & Harman Specialty Metals Group: *See—*
Wilke, David J., 3,857,266.

Hanks, Jack G.; El Taher, Mohammed A.; Seidling, Eugene H.; and Farley, James R., to Westinghouse Electric Corporation. Speed reducer. 3,857,301, Cl. 74-665.0ge.

Hannigan, John Paul: *See—*
Gregg, Joseph, Jr.; and Hannigan, John Paul, 3,858,195.

Hansen, Ralph H., to Stevens, J. P., & Co., Inc. Temperature adaptable fabrics. 3,857,753, Cl. 161-178.000.

Hansen, Theodore E.; and Wilson, Floyd A., to Anaconda Company, The. Flexible power cable. 3,857,996, Cl. 174-113.00r.

Hansman, John E. Barbecue grill. 3,857,380, Cl. 126-25.00a.

Harbolt, Bruce A.; Claghorn, David A.; and Block, Delbert W., to Union Oil Company of California. Cargo handling equipment. 3,857,499, Cl. 214-15.00d.

Hardwick, Charles W. Suture clamp. 3,857,396, Cl. 128-335.000.

Harig Precision, Inc.: *See—*
Press, John E., 3,857,259.

Harnois, Paul-Emile; and Lepine, Raymond. Tire removing apparatus. 3,857,430, Cl. 157-1.200.

Harris, Dwight L.: *See—*
Baak, Tryggve; and Harris, Dwight L., 3,857,719.

Harris, Paul Anthony, to Lucas Electrical Company Limited, The. Tire pressure monitoring system. 3,858,174, Cl. 340-58.000.

Harris, Paul M.; and Adamson, Shelby D. Electric discharge metal converter. 3,857,779, Cl. 250-544.000.

Harris, Vernon B.: *See—*
Flumm, Paul T.; and Harris, Vernon B., 3,857,234.

Harris, William H., Jr., to Micromatic Industries, Inc. Honing tool. 3,857,208, Cl. 51-346.000.

Harris-Intertype Corporation: *See—*
Harrison, Jimmy L.; Lehman, David F.; and Phelan, Harry Richard, 3,858,221.

Harrison, David Blackburn, to Lucas Electrical Company Limited, The. Direction indicator systems for tractor-trailer vehicles. 3,858,178, Cl. 340-80.000.

Harrison, Howard D. Fracture box. 3,857,390, Cl. 128-93.000.

Harrison, Jimmy L.; Lehman, David F.; and Phelan, Harry Richard, to Harris-Intertype Corporation. Limited scan antenna array. 3,858,221, Cl. 343-815.000.

Harsch, Thomas B., to Hoffmann-La Roche Inc., mesne. Polarized arrangement for liquid crystal displays. 3,857,627, Cl. 350-160.0lc.

Hart, Francis Joseph, to Martin Taximeters Caust Pty Ltd. Taximeters. 3,858,030, Cl. 235-30.00r.

Hartenstein, Johannes Hermann; Satzinger, Gerhard; and Warner-Lambert Company. Process for the preparation of cardiotonic glycosides. 3,857,832, Cl. 260-210.500.

Hartman, James M., to Tri Coastal Industries, Inc. Dump truck load-sensing assembly. 3,857,452, Cl. 177-139.000.

Hartmann, Bruno: *See—*
Wagenfuhrer, Gunter; Hartmann, Bruno; and Rothmann, Hans-Werner, 3,857,463.

Hartog, Michael. Vehicle leveling system. 3,857,582, Cl. 280-150.500.

Hartsough, Albert C.: *See—*
Long, Donald C.; Hartsough, Albert C.; and Sanford, Robert F., 3,858,132.

Hasegawa, Goro; and Ito, Masaharu, to Canon Kabushiki Kaisha. Interchange lens attachment for single lens reflex camera. 3,858,225, Cl. 354-46.000.

Hasegawa, Shojiro, to Nittan Kohki Kabushiki Kaisha; a/k/a Nittan Konki Co., Ltd. Locking means for clamps. 3,857,600, Cl. 294-104.000.

Hashimoto, Yukio: *See—*
Tsumura, Haruo; Hashimoto, Yukio; and Kubota, Hayata, 3,857,970.

Haskell, Vernon C.; and Hecht, James L., to Du Pont de Nemours, E. I., and Company. Process of coating polymeric shaped objects with aluminum orthophosphate, 3,857,723, Cl. 117-46.0fc.

Hassan, Morris, to Chrysler Corporation. Method of making a ball joint. 3,857,149, Cl. 29-149.50b.

Hata, Toshio. Method of assembling a full type ball bearing. 3,857,148, Cl. 29-148.40a.

Hatabu, Eizi: *See—*
Higashimura, Einosuke; Sekimoto, Yukihiko; and Hatabu, Eizi, 3,857,991.

Hatfield, Richard, Jr.; and Steele, Howard R., to Upjohn Company, The. Process for reducing the acidity and hydrolyzable chloride content of polyisocyanates. 3,857,871, Cl. 260-453.0sp.

Hauenstine, Edgar F., to Mallory, P. R., & Co., Inc. Rectilinear potentiometer and switch. 3,858,148, Cl. 338-178.000.

Haupt, Eugene J.; and Shymkus, Robert M., to DESA Industries, Inc. Chain saw. 3,857,179, Cl. 30-381.000.

Haury, Andre Lucien: *See—*
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Haveg Industries, Inc.: *See—*
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Hayase, Yoshio: *See—*
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Hayashi, Masaki; and Miyake, Hajimu, to Ono Pharmaceutical Co., Ltd. W-carbohydroxyalkyl esters of prostaglandins. 3,857,831, Cl. 260-209.00r.

Hayashi, Takao; and Fuji Photo Film Co., Ltd. Sheet containing developer for pressure-sensitive recording. 3,857,721, Cl. 117-36.800.

Hazeltine Corporation: *See—*
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Hazen, Wayne C.; and Hadzeriga, Pablo, to Molybdenum Corporation of America. Separating metal values by selective extraction. 3,857,919, Cl. 423-9.000.

Heaney, Paul R., to Eastman Kodak Company. Exposure control device for a photographic camera. 3,858,224, Cl. 354-42.000.

Hecht, James L.: *See—*
Haskell, Vernon C.; and Hecht, James L., 3,857,723.

Hedges, Carl D. Method of making tombstones and product thereof. 3,857,214, Cl. 52-103.000.

Hedley, Christopher Stelling: *See—*
Gilpin, William Cecil; Bown, Barry; and Hedley, Christopher Stelling, 3,857,698.

Heffran, Edward B., Jr. Compound motion rubbing machine. 3,857,206, Cl. 51-170.0mt.

Hegel, Robert W., to Monroe Auto Equipment Company. Shock absorber assembly tool. 3,857,307, Cl. 81-90.00c.

Heichlinger, Norbert: *See—*
Heinrich, Karl; and Heichlinger, Norbert, 3,857,232.

Heideman, Robert J. Interchangeable right angle or inline flow control valve. 3,857,405, Cl. 137-269.500.

Heifetz, Sidney T.; and Ran, George, to Theodore Equipment Corporation. Helical endless-belt mechanisms for full or empty dishtray transporting and lifting. 3,857,476, Cl. 198-136.000.

Heinrich, Karl: *See—*
Cardinal, Jutta; Heinrich, Karl; and Bauer, Gunther, 3,857,233.

Heinrich, Karl; and Heichlinger, Norbert, to Farbwerke Hoechst Aktiengesellschaft vormals Lucius. Filament yarn and process to prepare same. 3,857,232, Cl. 57-157.00r.

Hemenway, Wayne A. Rotary internal combustion engine. 3,857,370, Cl. 123-8.330.

Hendrickson, Roger L. Boarding platform for boats. 3,857,127, Cl. 9-1.00r.

Henn, Robert Walter; Scholly, Christian; Voytko, James Emery; Williford, Thomas Leslie, Jr.; McGonigal, Charles; Frey, Dean Rudisill; Smith, Donald Tolmon; and Gantis-Vedejs, Arthur, to Bell Telephone Laboratories, Incorporated. Devices for making electricl connections. 3,858,158, Cl. 339-99.00r.

Henninger, Ewald: *See—*
Kugelmann, Adolf; Conzelmann, Gerhard; Henninger, Ewald; Meyer, Dieter; and Seiler, Hartmut, 3,858,177.

Henrie, James O., to Rockwell International Corporation. System and method including a catalyst bed for combining hydrogen and oxygen gases. 3,857,927, Cl. 423-580.000.

Henry, Mort W.: *See—*
Borodin, Daniel J.; and Henry, Mort W., 3,857,416.

Henry, Richard D. Altitude detecting instrument. 3,858,172, Cl. 340-27.0na.

Henry, Tim Warren, to Motorola, Inc. Variable threahold flash encoder analog-to-digital converter. 3,858,200, Cl. 340-347.0ad.

Hensel, Jorg; Schaefer, Hans; and Schreyer, Gerd, to Deutsch Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of pure N-alkyl formamides. 3,857,886, Cl. 260-561.00r.

Henshaw, Bruce Collins; and Leary, Bruce, to Dulux Australia Ltd. Thermosetting coating compositions. 3,857,817, Cl. 260-67.60r.

Herbing, Lothar: *See—*
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Hercules Incorporated: *See—*
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Herculite Protective Fabrics Corporation: *See—*
Bernstein, Bruce S.; Hyman, Seymour; and Kapoor, Ramesh C., 3,857,934.

Herrick, Carlyle S.; and Shull, James J., to General Electric Company. Means for the oxygen/temperature control of aerobic fermentations. 3,857,757, Cl. 195-109.000.
Herring, Harold K.: *See—*
Sato, Kunito; and Herring, Harold K., 3,857,981.
Herrmann, Rolf; and Sohring, Gunther, to Patent-Treuhand-Gesellschaft fur electrische Gluhlampen m.b.h. Low pressure mercury vapor discharge lamp. 3,858,075, Cl. 313-178.000.
Hesston Corporation: *See—*
Case, Cecil L.; Fell, Ferol S.; and Burkhart, Merle K., 3,857,298.
Hester, Jackson B., Jr., to Upjohn Company, The. 6-Phenyl-1h, 4h-[1,2,4] oxadiazolo [4,3-] [1,4] benzodiazepin-1-ones. 3,857,854, Cl. 260-307.00a.
Hewitt, John G. Coin packaging apparatus. 3,857,224, Cl. 53-131.000.
Heymann, Frank J., to Westinghouse Electric Corporation. Noise suppressing throttle valve. 3,857,542, Cl. 251-120.000.
Higashide, Carlos S., to GTE Automatic Electric Laboratories Incorporated. Intermediate communication link for use in electronic systems. 3,858,010, Cl. 179-174.000.
Higashimura, Einosuke; Sekimoto, Yukihiko; and Hatabu, Eizi, to Nitto Chemical Industry Co., Ltd. and Mitsubishi Rayon Co., Ltd. Earth resistance-reducing agent and method of reducing earth resistance by use of same. 3,857,991, Cl. 174-6.000.
Higgins, John, to Singer Company, The. Variable eccentric and locating plate. 3,857,345, Cl. 112-79.00r.
Hilbon, Edward. Identification means for an article and method and apparatus for recording same. 3,857,640, Cl. 356-162.000.
Hilborn, Edwin H.: *See—*
Vrabel, Joseph D.; and Hilborn, Edwin H., 3,858,196.
Hill, Kenneth L.; and Wilson, Kenneth R., to FMC Corporation. Anilide carbamates as herbicides. 3,857,693, Cl. 71-106.000.
Hill, Richard D., to A & A Engineering Company. Digital readout method and apparatus. 3,857,200, Cl. 51-5.00d.
Hill, William Frank, to Lucas Electrical Company, The. Battery charging systems. 3,858,103, Cl. 320-64.000.
Hille International Limited: *See—*
Scott, Frederick, 3,857,604.
Hills, Marvin S. Snap hook. 3,857,142, Cl. 24-237.000.
Hinden, Milton; and Giannone, Charles, to Duro-Dyne Corporation. Multi-head resistance welding apparatus. 3,858,024, Cl. 219-98.000.
Hindermann, Peter: *See—*
Schwander, Hansrudolf; Buhler, Arthur; and Hindermann, Peter, 3,857,864.
Hirakawa, Michio: *See—*
Yamaguchi, Tadashi; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao, 3,857,816.
Hirata, Sadao; Yamada, Muneki; and Kishimoto, Akira, to Toyo Seikan Kaisha Limited. Resinous compositions having improved processability and gas permeation resistance and molded structures thereof. 3,857,754, Cl. 161-227.000.
Hiratsuka, Nobuo; and Shimoda, Kiyotaka, to Fuji Photo Film Co., Ltd. Method of rendering electrophoresis membrane transparent. 3,857,778, Cl. 204-299.00r.
Hirayama, Shinichi: *See—*
Ooba, Seiichi; and Hirayama, Shinichi, 3,857,799.
Hirschfield, John Alfred; Lablans, Johannes Franciscus; and Shankland, William, to Alcan Research and Development Limited. Forming pressure-welded joints. 3,857,163, Cl. 29-482.000.
Hitachi, Ltd.: *See—*
Iwasaka, Tatsuo; Yuminaka, Takeo; Matsuzawa, Hideto; and Ishizuka, Taiji, 3,857,465.
Kajiwara, Toshiyuki, 3,857,268.
Kaneko, Yoichi; and Kimura, Katsuhiro, 3,858,121.
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Miyata, Kenzi; and Kamei, Tatsuya, 3,858,233.
Mori, Akihiro; and Mitsui, Norihiko, 3,857,555.
Hitchcock, Richard M., to Dufresne-Henry Engineering Corporation. Hazard light shield. 3,858,041, Cl. 240-46.530.
Hobart Manufacturing Company, The: *See—*
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Warzecha, Klaus; Stolting, Klaus; and Schminke, Wolfgang, 3,857,833.
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Hoechst Aktiengesellschaft vormals: *See—*
Horlein, Gerhard; Schonowsky, Hubert; Gassner, Georg Gustav; Landeluddeke, Peter; and Studeneer, Adolf, 3,857,836.
Hoesch Werke Aktiengesellschaft: *See—*
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Hoffman, Paul R.; and Naeyaert, Roger S., to Burroughs Corporation. Tapeless paper motion control system providing sensing circuits to govern motor incrementing. 3,857,471, Cl. 197-133.00r.
Hoffman-La Roche Inc.: *See—*
Gutzwiller, Juerg Albert; and Uskokovic, Milan Radoje, 3,857,837.
Hoffmann, Ralf; and Wennemann, Werner, to Hoesch Werke Aktiengesellschaft. Method for the production and/or testing of welded helical seam pipe. 3,857,162, Cl. 29-477.300.
Hoffmann-La Roche Inc.: *See—*
Green, Jeffrey Alan; Magid, Louis; and Sleezer, Paul Edward, 3,857,939.
Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, 3,857,846.
Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, 3,857,847.
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Strong, Robert D., 3,857,628.
Hoglund, Nils O., to Tri-Ordinate Corporation. Apparatus for inspecting the accuracy of complexly contoured precision surfaces. 3,857,185, Cl. 33-174.00p.
Holan, George, to Monsanto Australia Limited. Insecticidal compositions and methods. 3,857,956, Cl. 424-341.000.
Holbrook, Rex R.: *See—*
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Holland, John H.; and Fox, Gene O., to Arkansas Rock and Gravel Co. Self-unloading particulate material delivery system. 3,857,502, Cl. 214-83.360.
Holmes, Ann; and Meyer, Robert F., to Parke, Davis & Company. Aminoalkanol compounds and methods for their production. 3,857,891, Cl. 260-570.700.
Holzapfel, Jurgen, to Robot Foto und Electronic GmbH & Co. KG. Device for photographic monitoring of road intersections controlled by a traffic light. 3,858,223, Cl. 346-107.0vp.
Honeycutt, James Reed: *See—*
Bradley, Walter Eugene; Clontz, Raeford Warren; Floyd, Terry Stephen; and Honeycutt, James Reed, 3,857,309.
Honeywell Inc.: *See—*
Bonne, Ulrich, 3,858,001.
Chen, Di; and Otto, Gary N., 3,857,734.
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Honeywell Information Systems Italia: *See—*
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Honeywell Information Systems Limited: *See—*
Aitken, John Stuart; Green, Bernard Leslie; and Cormie, William Alexander, 3,857,290.
Hoodenpyle, James A. Cart for moving television, hi-fi cabinets and the like. 3,857,579, Cl. 280-47.200.
Hooker Chemical Corporation: *See—*
Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., 3,857,811.
Hoover, Troy Eugene: *See—*
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Horlein, Gerhard; Schonowsky, Hubert; Gassner, Georg Gustav; deceased (by Gassner, Margot, nee Heinemann; heiress); Landeluddeke, Peter; and Studeneer, Adolf, to Hoechst Aktiengesellschaft vormals. Herbicidal agents. 3,857,836, Cl. 260-240.00g.
Horst, Ralph L.: *See—*
McKee, Arvil B.; Brown, Robert H.; and Horst, Ralph L., 3,857,973.
Hoshi, Hiroshi: *See—*
Yamaguchi, Tadashi; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao, 3,857,816.
Houghton-Larsen, Erik; and Kjaergaard, Ole Gronning, to Aktieselskabet Niro Atomizer. Apparatus for the continuous extraction in counterflow of powdered materials. 3,857,332, Cl. 99-536.000.
Howeler, Warren F.; Radosh, Lubi; Roth, Donald J.; Wright, Norbert L.; Grek, John W.; Godsted, Kent B.; and Geuss, Joseph A., to Continental Can Company, Inc. Apparatus for electrohydraulically forming tubular elements. 3,857,265, Cl. 72-56.000.
Htsui, John S. C., to Emerson Electric Co. Dynamoelectric control system and motor therefor. 3,858,098, Cl. 318-138.000.
Huber, J. M., Corporation: *See—*
Hackbarth, Lowell E.; and Crockett, Joseph T., 3,857,464.
Maynard, Robert Nelson, 3,857,781.
Hueckel, Edward J.: *See—*
Rogols, Saul; Hueckel, Edward J.; and Salter, John W., 3,857,987.
Huessy, Eric G., to Peavey Company. Food flavor pellets with wheat flour, soy flour and buttermilk base. 3,857,977, Cl. 426-189.000.
Huggins, James A. Gas nebulizing apparatus. 3,857,909, Cl. 261-64.00r.
Hughes Aircraft Company: *See—*
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Parke, Donald P.; Priester, Willis M.; Scheidler, Stuart P.; and Goldberg, Gerald M., 3,858,208.
Scheidler, Stuart P.; Goldberg, Gerald M.; Sidlo, Richard; King, Donald L.; and Gebhardt, Richard A., 3,858,206.

Hughes, George W. Gauge and switch diaphragm protector. 3,858,014, Cl. 200-83.00r.
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Hull, Joseph F., to United States of America, Army. Frequency diversity radar. 3,858,219, Cl. 343-17.20r.
Hulterstrum, Harold D., to Gulf & Western Industries, Inc. Relay clutch timer. 3,857,467, Cl. 192-33.00r.
Hultgren, Frank A.; and Kot, Richard A., to Republic Steel Corporation. Steel product having improved mechanical properties. 3,857,741, Cl. 148-36.000.
Humphrey, Clyde W. Extrusile hydraulic cement compositions containing alkali and carbohydrate. 3,857,715, Cl. 106-92.000.
Hunnicutt, Clyde J., Jr. Ventilating attachment for water closet. 3,857,119, Cl. 4-213.000.
Hunt, Harry, to Alpine Designs. Sleeping bag construction. 3,857,125, Cl. 5-343.000.
Hunt-Wesson Foods, Inc.: *See—*
Gibble, Walter P.; and Reid, Edward J., 3,857,866.
Reid, Edward J.; and Morgan, Perry W., Jr., 3,857,985.
Hunter, Eugene A., to Texas Instruments Incorporated. Time-delay relay and method of assembling same. 3,858,139, Cl. 337-88.000.
Hunter, Willard L.; and Stickney, William A., to United States of America, Interior. Smelting of copper oxides to produce blister copper. 3,857,701, Cl. 75-74.000.
Hutchins, Thomas B., IV. Method of making a ductile hermetic indium seal. 3,857,161, Cl. 29-472.700.
Hutchinson, Lloyd B.: *See—*
Stain, S. Douglas, Jr.; Liu, Gordon Y. T.; and Hutchinson, Lloyd B., 3,857,813.
Hutner, Mark A.; and Wilmes, Raymond A., to Xerox Corporation. Commutator disk for zip code sorting. 3,858,054, Cl. 250-556.000.
Hutson, George Ernest, to Hercules Incorporated. Adjustable container conveyor for filling machine. 3,857,474, Cl. 198-131.000.
Hydrocarbon Research, Inc.: *See—*
Lehman, Leon M., 3,857,685.
Hyman, Seymour: *See—*
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Ibuka, Yasuhiko: *See—*
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Ichikawa, Yataro; and Yamaji, Teizo, to Teijin Limited. Process for producing biphenylpolycarboxylic acid esters. 3,857,874, Cl. 260-473.00r.
Ichiko Industries Limited: *See—*
Yamashita, Makoto; Ikura, Kenkichi; and Kushida, Masagoro, 3,857,632.
Idelson, Elbert M., to Polaroid Corporation. Substituted phthalocyanine dye developers and their use in multicolor diffusion transfer processes. 3,857,855, Cl. 260-314.500.
Ikura, Kenkichi: *See—*
Yamashita, Makoto; Ikura, Kenkichi; and Kushida, Masagoro, 3,857,632.
Imai, Masaru: *See—*
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Sawazaki, Hajime; Sakai, Kiyohide; Tsutsumi, Hiroshi; Sumitomo, Yasusuke; Niwa, Kazuo; and Inaba, Eisaku, 3,858,237.
Inada, Satoshi: *See—*
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Inamura, Takahiro; Sawamoto, Kenichi; Niizeki, Nobukazu; Tsunekawa, Munehisa; and Nakata, Yasuyuki. Alkali free lead silicate glass medium for ultrasonic delay lines. 3,857,713, Cl. 106-53.000.
Industrial Reels Limited: *See—*
Mobey, Hubert Brian, 3,857,530.
Industriele Onderneming Wavin N.V.: *See—*
Oostenbrink, Albertus Anthony, 3,857,589.
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Chevriot, Roland F.; Le Maux, Gilles R.; and Gonon, Marcel P., 3,857,712.
Ingersoll-Rand Company: *See—*
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Inomata, Mamoru; and Hanabusa, Kazuo, to L'Air Liquide, Societe Anonyme pour l'Etude et Exploitation des Procedes Georges Claude. Purification of turpentine by a process for the recovery of one or more dissolved products from complex liquid mixtures. 3,857902, Cl. 260-675.500.
Institut de Recherches de la Siderurgie Francaise: *See—*
Antoine, Jacques; and Vayssiere, Pierre, 3,857,697.
Instituto Chemioterapico Italiano S.p.A.: *See—*
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Kenyon, Richard Arthur, 3,858,060.
Magdo, Ingrid E.; and Magdo, Steven, 3,858,231.
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International Magna Corporation: *See—*
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International Minerals & Chemical Corporation: *See—*
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International Multifoods Corporation: *See—*
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International Nickel Company, Inc., The, mesne: *See—*
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Iritono, Yoshihisa; and Sakurai, Mitsuo, to Ogura Clutch Co., Ltd. Self-adjusting clutch or brake. 3,857,468, Cl. 192-84.00c.
Irving, Gus M., Jr.: *See—*
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Isaacs, Philip K.; and Paton, Alexander C., to Grace, W. R., & Co. Vinyl acetate-alpha olefin coating compositions. 3,857,806, Cl. 260-29.60r.
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Itek Corporation: *See—*
Foster, Leigh Curtis, 3,858,201.
Iten, Clemens A., to Morris, Philip, Incorporated. Method of shaping sheet material. 3,857,270, Cl. 72-324.000.
Ito, Masaharu: *See—*
Hasegawa, Goro; and Ito, Masaharu, 3,858,225.
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Iwasaka, Tatsuo; Yuminaka, Takeo; Matsuzawa, Hideto; and Ishizuka, Taiji, to Hitachi, Ltd. Elevator control device. 3,857,465, Cl. 187-29.00r.
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Jackson, Walter G. Ultrasonic carburetion enchancer. 3,857,375, Cl. 123-141.000.
Jacob, Hermann. Regenerating of casting sand. 3,857,201, Cl. 51-8.00r.
Jacobs, Leland Harnden, to Tufdura Limited. Composite sheet capable of withstanding impingement by particulate materials. 3,857,751, Cl. 161-89.000.
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James, John William: *See—*
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Jansson, Klas Einar; and Sjostrand, Staffan Gunnar. Device at musical instruments with a piano keyboard or the like. 3,857,318, Cl. 84-403.000.

Jantzen, Johannes K., to International Video Corporation. Tape reel cartridge. 3,857,531, Cl. 242-197.000.

Jardin, Hans, to Webasto-Werke W. Baier KG. Clamping linkage for automobile sliding roofs. 3,857,603, Cl. 296-137.00f.

Jaron, Dov: *See—*
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Jedynak, Leo; and Bert, Paul A., to Oak Industries, Inc. Security system with means for subscriber control. 3,858,194, Cl. 340-276.000.

Jelich, George W. Hot tube handling device. 3,857,598, Cl. 294-27.00r.

Jenkins, Anthony; and Vincett, Colin Jeffrey. Method and apparatus for leak testing sealed containers. 3,857,278, Cl. 73-40.700.

Jennings, Kirk E.; and Seiple, Ronald L., to United States of America, Navy. Depthometer. 3,857,283, Cl. 73-300.000.

Jensen, Jens-Lauge Bolund; Moller, Per Julius Leth; and Mortensen, Anna Birthe. Method of thawing deep-frozen meat products. 3,857,988, Cl. 426-506.000.

Jensen, Ole R.: *See—*
Jensen, Preben W.; and Jensen, Ole R., 3,857,187.

Jensen, Preben W.; and Jensen, Ole R. Mechanical motion device. 3,857,187, Cl. 33-271.000.

Jewett, Harold A. Frontward-rowing boat spanning angular oars having self-surfacing blades. 3,857,356, Cl. 115-24.100.

Johns, Burton A., 1/4 each to Loechner, John M., Griff, John K. and Griff, Gary J. Modular nestable pallet. 3,857,342, Cl. 108-53.000.

Johns-Manville Corporation: *See—*
Meeker, Brian Lee, 3,857,590.

Johnson & Johnson: *See—*
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Johnson, Arthur L. Mulch packet. 3,857,195, Cl. 47-32.000.

Johnson, Chester A. Process for preparation and preservation of eggs. 3,857,980, Cl. 426-250.000.

Johnson Diversified, Inc.: *See—*
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Johnson, Howard L., to Caterpillar Tractor Company. Hydraulically operated lock valve assembly. 3,857,404, Cl. 137-102.000.

Johnson, Keith G.; and Limbach, Anthony Paul, to Arco Polymers, Inc. Forming apparatus for multiple steam shaping. 3,857,664, Cl. 425-327.000.

Johnson, Robert A., to Rockwell International Corporation. Stable and compact low frequency filter. 3,858,127, Cl. 333-72.000.

Johnson, Ronald: *See—*
Yarrow, Christopher John; and Johnson, Ronald, 3,858,107.

Johnson, Russell L.; Peerenboom, Robert J.; Fries, Donald M.; Kaczmarzyk, Leonard M.; and Buss, Arnold J., to Kimberly-Clark Corporation. Conformable absorbent tampon and inserter device therefor. 3,857,395, Cl. 128-263.000.

Jones, David Henry: *See—*
Amin, Shirish Chamdubhai; Jones, David Henry; and Maxwell, Donald Robert, 3,857,943.

Jones, Faber B.; Williams, Ralph P.; and Doss, Richard C., to Phillips Petroleum Company. Polyesters from the reaction of polyols and a mixture of mercaptoalkanoic and thioalkanoic acids. 3,857,876, Cl. 260-481.00r.

Jones, Howard S., Jr., to United States of America, Army. Antenna system. 3,858,214, Cl. 343-100.0pe.

Jones, James Kevin. Reliquefaction of boil off gas. 3,857,245, Cl. 60-651.000.

Jones, Ronnie G.; and Daly, John P., to Maul Bros., Inc. Gob distributor. 3,857,691, Cl. 65-303.000.

Jones, Thomas Alan; and Anthony, Andrew James, to Combustion Engineering, Inc. Gripper device. 3,857,599, Cl. 294-90.000.

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Joyce, Patrick J.: *See—*
Leveen, Harry H., 3,857,140.

Jumer, John F. Electrochemical processing of inner surfaces of large vessels. 3,857,764, Cl. 204-26.000.

Jun, Sekiba, to Yamauchi Rubber Industry Co., Ltd. Apparatus for multipolar magnetization. 3,858,136, Cl. 335-284.000.

Junichi, Teranishi: *See—*
Nakahara, Teiji; Ueda, Misao; Kuninaga, Minoru; and Junichi, Teranishi, 3,857,228.

Justice, James W. H.; and Uhler, Marcus H., to Westinghouse Electric Corporation. Audio coding system for educational TV. 3,857,998, Cl. 178-5.600.

Justice, James W. H., to Westinghouse Electric Corporation. Converter for a line shared educational TV system. 3,857,999, Cl. 178-5.600.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Kobayashi, Hirotsugi; Nishikawa, Takehiko; Ito, Shinya; and Ibuka, Yasuhiko, 3,857,454.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Komatsu, Noboru; Arai, Tohru; Obayashi, Mikio; and Endo, Junji, 3,857,725.

Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho: *See—*
Kaneko, Yuichiro; Teraoka, Fuminori; Kubota, Tatsushi; and Nishikawa, Takehiko, 3,857,581.

Kaczmarzyk, Leonard M.: *See—*
Johnson, Russell L.; Peerenboom, Robert J.; Fries, Donald M.; Kaczmarzyk, Leonard M.; and Buss, Arnold J., 3,857,395.

Kagiya, Tsutomu; Mitsui, Hiroshi; Tsuneta, Kazuyoshi; and Mihara, Hiroshi, to Ube Industries, Ltd. Process for radiation cross-linking polymethyl acrylate-methyl acrylate compositions. 3,857,768, Cl. 204-159.160.

Kajiwara, Toshiyuki, to Hitachi, Ltd. Rolling mill and rolling method. 3,857,268, Cl. 72-247.000.

Kaken Chemical Co., Ltd.: *See—*
Tanaka, Yoshiaki; Saito, Hideo; Miyazaki, Yukio; Sugawara, Hideo; Nagatsu, Junsaku; and Shibuya, Mitsuo, 3,857,948.

Kakimoto, Morio: *See—*
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Kakunodate, Masamichi: *See—*
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Kalafus, Edward F.; and Wise, Richard M., to General Tire & Rubber Company, The. Bonding polyesters to rubber. 3,857,730, Cl. 117-76.00t.

Kalert, Ralph E.: *See—*
Brown, Morris C.; Cook, Forrest W.; Kalert, Ralph E.; Vollmer, Arthur C.; and Winkley, Jerry H., 3,857,908.

Kalle Aktiengesellschaft: *See—*
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Kamei, Tatsuya: *See—*
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Kameya, Kasuo, to Toko, Inc. Mutual inductance adjusting circuit. 3,858,126, Cl. 333-29.000.

Kampe, Andrew J.: *See—*
Bedard, Ronald L.; and Kampe, Andrew J., 3,858,144.

Kanazaki, Mikio: *See—*
Kohyama, Masaharu; Miyamoto, Akio; Kobayashi, Satoshi; and Kanazaki, Mikio, 3,858,073.

Kaneko, Yoichi; and Kimura, Katsuhiro, to Hitachi, Ltd. Solid state microwave oscillator with stabilizing resonator and AFC loop. 3,858,121, Cl. 331-9.000.

Kaneko, Yuichiro; Teraoka, Fuminori; Kubota, Tatsushi; and Nishikawa, Takehiko, to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho. Safety belt device for vehicles. 3,857,581, Cl. 280-150.0sb.

Kantrowitz, Adrian: *See—*
Williams, Maryon J., Jr.; Walkowitz, Walter; Fich, Sylvan; Jaron, Dov; Kantrowitz, Adrian; and Molony, Donald A., 3,857,382.

Kapoor, Ramesh C.: *See—*
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Karamchand Premchand Private Limited: *See—*
Somasekhara, Shanker; and Upadhyaya, Navinchandra Vasantrai, 3,857,877.

Karkau, Lawrence E.; and Rusco, Samuel G., to Diamond Reo Trucks, Inc. Mounting for tilt cab vehicles. 3,857,602, Cl. 296-35.00a.

Karlovetz, Arthur R.; and Placek, Eugene W., to International Magna Corporation. Radiant burner. 3,857,670, Cl. 431-329.000.

Kartrid Pak Co., The: *See—*
Roberts, Gary Francis, 3,857,424.

Karubian, Ralph: *See—*
Karubian, Ralph; and Quintana, Elias D. (said Quintana assor. to said), 3,857,177.

Karubian, Ralph; and Quintana, Elias D., said Quintana assor. to said Karubian, Ralph. Dehiding apparatus. 3,857,177, Cl. 30-216.000.

Katashiba, Yashutada: *See—*
Kojima, Makoto; Noda, Yuzuru; Uazaki, Shiro; and Katashiba, Yashutada, 3,857,820.

Katayama, Hajime; Nitanda, Hiroshi; and Miyamoto, Koichi, to Canon Kabushiki Kaisha. Device for drying and fixing copying material. 3,857,189, Cl. 34-95.000.

Katner, Allen S., to Lilly, Eli, and Company. 3-Alkyl-5-(alpha-cyanobenzylidene) oxazolidine-2,4-diones. 3,857,853, Cl. 260-307.00b.

Kato, Kyosuke. Frying pan splash shielding device. 3,857,381, Cl. 126-384.000.

Kato, Shoichi: *See—*
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Kato, Taketoshi: *See—*
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Kaufhold, Horst Thomas, to Amsted Industries, Incorporated. Knuckle structure for coupler. 3,857,495, Cl. 213-151.000.

Kaufman, Howard N.; and Raimondi, Albert A., to Westinghouse Electric Corporation. Lubrication for heavy duty thrust bearings. 3,857,462, Cl. 184-11.00a.

Kavanaugh, Harry H. Safety mirror assembly. 3,857,539, Cl. 248-475.00r.

Kawaguchi, Hiroshi; Tomita, Koji; Tsukiura, Hiroshi; and Saito, Kyo-Ichiro, to Bristol-Myers Company. Process for production of antibiotic. 3,857,756, Cl. 195-96.000.

Kawakita, Chihiro: *See*—
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Kawanami, Toru: *See*—
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Keefe, George E., to International Business Machines Corporation. Multiphase magnetic bubble domain decoder. 3,858,188, Cl. 340-174.0tf.

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Keijzer, Johan H.; Van den Berg, J. Hans; Pierle, Willy R. J.; and Jossa, Louis Joseph, to Monroe Belgium N.V. Vehicle leveling system. 3,857,580, Cl. 280-124.00f.

Keil, Gunther, to Hoechst Aktiengesellschaft. Process for the manufacture of carboxylic acid and sulfonic acid chlorides. 3,857,841, Cl. 260-250.00r.

Keller, Allen B.: *See*—
Ward, John T.; and Keller, Allen B., 3,857,358.
Ward, John T.; and Keller, Allen B., 3,857,359.

Keller, Howard F., to Global Environmental Technologist Corporation. Removal of contaminants from hydrocarbon liquids. 3,857,770, Cl. 204-188.000.

Kelly, Thomas E.; and Shelton, James K. Cofferdam. 3,857,249, Cl. 61-68.000.

Kemp, Fred S.; and George, Michael A., to United Aircraft Corporation. Sequential catalyzation of fuel cell supported platinum catalyst. 3,857,737, Cl. 136-120.0fc.

Kennecott Copper Corporation: *See*—
Ammann, Paul R.; Kim, Jang Ho; and Redman, Michael J., 3,857,699.
Ammann, Paul R.; and Kim, Jang Ho, 3,857,700.

Kennedy, Frank, to United States Steel Corporation. Polystyrene extruder die plate. 3,857,665, Cl. 425-378.000.

Kenney Manufacturing Company: *See*—
Williamson, John E., 3,857,538.

Kenny, Thomas M. Temperature-sensitive snap-action valve. 3,857,446, Cl. 169-60.000.

Kenyon, Richard Arthur, to International Business Machines Corporation. Integrated driver circuit. 3,858,060, Cl. 307-270.000.

Kerr, John F. Cyclist's heated suit. 3,858,028, Cl. 219-211.000.

Kessler, Hellmuth: *See*—
Becker, Ernst; Naarmann, Herbert; Schneider, Jurt; and Kessler, Hellmuth, 3,857,821.

Kewanee Oil Company, The: *See*—
Carlson, Roland Wester, 3,858,050.

Khanin, Grigory Alexandrovich. Method of eliminating vibrations of the regulating valve. 3,857,401, Cl. 137-1.000.

Khanna, Rakesh, to Litton Business Systems, Inc. High speed driver circuit. 3,858,059, Cl. 307-264.000.

Khilevich, Solomon Abramovich: *See*—
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Kida, Kazuyoshi; Sakurai, Morio; Furuta, Shigeru; and Yamauchi, Seiichi, to Teijin Limited. Method of forming a plurality of sheds and thereby a plurality of pieces of fabrics in a shuttleless loom. 3,857,418, Cl. 139-20.000.

Kikkoman Shoyu Co., Ltd.: *See*—
Kikuchi, Mamoru; Sakaguchi, Kenji; and Nakano, Eiichi, 3,857,967.

Kikuchi, Mamoru; Sakaguchi, Kenji; and Nakano, Eiichi, to Kikkoman Shoyu Co., Ltd. and Noda Institute for Scientific Research. Preparation of food and beverages with peptidoglutaminase. 3,857,967, Cl. 426-18.000.

Kim, Jang Ho: *See*—
Ammann, Paul R.; Kim, Jang Ho; and Redman, Michael J., 3,857,699.
Ammann, Paul R.; and Kim, Jang Ho, 3,857,700.

Kim, Tai K.: *See*—
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Kim, Tat K.; Laferty, John M.; Macinnis, Martin B.; Patton, James C.; and Quatrini, L. R., to GTE Sylvania Incorporated. Process for producing ammonium metatungstate from ammonium tungstate by ion exchange. 3,857,928, Cl. 423-593.000.

Kimberly-Clark Corporation: *See*—
Johnson, Russell L.; Peerenboom, Robert J.; Fries, Donald M.; Kaczmarzyk, Leonard M.; and Buss, Arnold J., 3,857,395.

Kimura, Katsuhiro: *See*—
Kaneko, Yoichi; and Kimura, Katsuhiro, 3,858,121.

Kimura, Yoshita. Apparatus for precisely thrusting pipes into the ground. 3,857,449, Cl. 175-26.000.

Kineyko, William Robert: *See*—
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King, David P., to King-Bartolotta, Inc. Method and apparatus for preparing an animal food product. 3,857,989, Cl. 426-518.000.

King, Donald L.: *See*—
Scheidler, Stuart P.; Goldberg, Gerald M.; Sidlo, Richard; King, Donald L.; and Gebhardt, Richard A., 3,858,206.

King-Bartolotta, Inc.: *See*—
King, David P., 3,857,989.

Kinne, Howard R. Mechanical skimmer. 3,857,787, Cl. 210-470.000.

Kinzer, Jackson E.; and Fallandy, Martin A., to Rockwell International Corporation. Fuel pin securing apparatus. 3,857,755, Cl. 176-78.000.

Kirilloff, Victor V., to Mosebach Manufacturing Company. Frame supported grid resistors. 3,858,149, Cl. 338-295.000.

Kishimoto, Akira: *See*—
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Kishimoto, Kyuji; and Sawada, Hiraki, to Nissan Motor Company, Limited. Ignition system of rotary piston engine. 3,857,368, Cl. 123-8.090.

Kistler Instrumente A.G.: *See*—
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Kitaichi, Satoshi: *See*—
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Kitamura, Shigeyoshi: *See*—
Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Okuno, Yositosi; and Fujimoto, Keimei, 3,857,858.

Kjaergaard, Ole Gronning: *See*—
Houghton-Larsen, Erik; and Kjaergaard, Ole Gronning, 3,857,332.

Klebanoff, Gregory, Jr., to Beloit Corporation. Web material roll with end protectors and method for making same. 3,857,486, Cl. 206-386.000.

Kleer-Vu Industries, Inc.: *See*—
Mascolo, Benjamin R., 3,857,192.

Kleimeyer, Vernon T., to General Signal Corporation. Tape programmer for time recorders. 3,858,222, Cl. 346-17.000.

Klein, Dieter Heinrich: *See*—
Crozier, William Andrew; and Klein, Dieter Heinrich, 3,857,808.

Klein, Gerald B. Leader with a line connector. 3,857,645, Cl. 403-206.000.

Klepper, Lowell A., to United States of America, Agriculture. Method for determining toxicity of phytotoxins in plants. 3,857,678, Cl. 23-230.00r.

Klint, Jan Tavsen. Conveyor for advancing and orienting eggs and transferring the eggs to gripper units of an egg breaking machine. 3,857,472, Cl. 198-20.00r.

Kloeckner-Werke AG: *See*—
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Knapp, Charles C.: *See*—
Knapp, Kenneth M.; and Knapp, Charles C., 3,857,132.

Knapp, Kenneth M.; and Knapp, Charles C. Pipeline pig operable in two directions. 3,857,132, Cl. 15-104.06r.

Knapp, Philip B., to Minnesota Mining & Manufacturing Co. Seed containing pellet forming equipment. 3,857,659, Cl. 425-145.000.

Knipp, Ulrich; Boden, Heinrich; Ersfeld, Heinrich; Schneider, Walter; and Moeres, Reiner, to Bayer Aktiengesellschaft. Machine for producing foams, homogeneous or structural materials from at least two liquid reaction components. 3,857,550, Cl. 259-4.000.

Knudson, Glenn C. Bean thinning and cutting device. 3,857,225, Cl. 56-13.600.

Koba, Sadaaki: *See*—
Takiguchi, Sunichi; Satoyoshi, Yasuhiko; Hamada, Shinji; Nakamura, Takeshi; Koba, Sadaaki; and Shimoda, Noboru, 3,857,153.

Kobayashi, Hirotsugi; Nishikawa, Takehiko; Ito, Shinya; and Ibuka, Yasuhiko, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Switches mounting means for use in a motor-vehicle. 3,857,454, Cl. 180-78.000.

Kobayashi, Satoshi: *See*—
Kohyama, Masaharu; Miyamoto, Akio; Kobayashi, Satoshi; and Kanazaki, Mikio, 3,858,073.

Kobayashi, Shigeru: *See*—
Ohi, Reiichi; Sugiyama, Mitsunori; Nakajima, Yosuke; Horie, Michio; and Kobayashi, Shigeru, 3,857,711.

Kobel, Erwin H.: *See*—
Smith, Harry A.; and Kobel, Erwin H., 3,857,815.

Koch, Christian, to Siemens Aktiengesellschaft. Flameless catalytic combustion of hydrocarbon in porous sintered stones. 3,857,668, Cl. 431-328.000.

Koch, George R.; and Petersen, Carl T., to Etec Corporation. Method and apparatus for sem specimen coating and transfer. 3,858,049, Cl. 250-441.000.

Kohyama, Masaharu; Miyamoto, Akio; Kobayashi, Satoshi; and Kanazaki, Mikio, to Hitachi, Ltd. Plane multi-digit type electric discharge display devices. 3,858,073, Cl. 313-54.000.

Koike, Fuji. Handicraft tool. 3,857,592, Cl. 289-17.000.

Koizumi, Ken; Sumimoto, Toru; Matsushita, Shigeo; and Furukawa, Motaoaki, to Nippon Selfoc Company, Limited. Ion exchange process for manufacturing integrated optical circuits. 3,857,689, Cl. 65-30.000.

Koizumi, Shun: *See—*
Kometani, Yutaka; Koizumi, Shun; and Suzuki, Takeshi, 3,857,807.

Kojima, Makoto; Noda, Yuzuru; Uazaki, Shiro; and Katashiba, Yashutada, to Nitto Electric Industrial Co., Ltd. Solution for forming thermally resistant polymers. 3,857,820, Cl. 260-77.5am.

Koltz, Irving Morton. Display container. 3,857,481, Cl. 206-45.140.

Komatsu, Noboru; Arai, Tohru; Obayashi, Mikio; and Endo, Junji, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for forming an iron-manganese carbide layer on the surface of an iron base alloy article containing carbon. 3,857,725, Cl. 117-49.000.

Kometani, Yutaka; Koizumi, Shun; and Suzuki, Takeshi, to Daikin Kogyo Co., Ltd. Fluorelastomer composition. 3,857,807, Cl. 260-29.60f.

Kondo, Yoshikazu: *See—*
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Kopera, Joseph J., Jr., to Chrysler Corporation. Motor vehicle electronic security alarm system using sequence control arming. 3,858,175, Cl. 340-63.000.

Korell, Donald D.: *See—*
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Korell, Donald D., to Steelcase Inc. Desk lock system. 3,857,620, Cl. 312-219.000.

Kornfeld, Jack P., to Bliss & Laughlin Industries, Incorporated, mesne. Credit card having clear middle layer encoded by discrete opaque areas and system for decoding same by laser beam. 3,858,031, Cl. 235-61.11e.

Kornylak, Andrew T., to Kornylak Corporation. Powered rail conveyor. 3,857,473, Cl. 198-127.00r.

Kornylak Corporation: *See—*
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Kot, Richard A.: *See—*
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Koury, Frederic, to GTE Sylvania Incorporated. Metal halide discharge lamp having an arched arc tube. 3,858,078, Cl. 313-220.000.

Kozlov, Stanislav Fedorovich. Device for measuring the rate of energy loss and for detecting ionizing nuclear radiations against gamma-radiation background. 3,858,047, Cl. 250-370.000.

Kraft, Paul; and Altscher, Siegfried, to Stauffer Chemical Company. Fire retardant thermoplastic polymer compositions. 3,857,906, Cl. 260-876.00r.

Kraftwerk Union Aktiengesellschaft: *See—*
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Kramer & Grebe KG Maschinen und Moldellfabrik: *See—*
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Kramer, Jacob: *See—*
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Kranz, Raymond E., to Extel Corporation. Precision paper take-up device for high speed web feed printer. 3,857,527, Cl. 242-75.500.

Kraus, Theodore C.; and Scardera, Michael, to United States of America, Army, mesne. Preparation of AlH_3 via $NaAlH_4$-$AlCl_3$ in ether-toluene. 3,857,930, Cl. 423-645.000.

Kreider, Eunice M., to Searle, G. D., & Company. Halo/nitro-substituted benzaldehyde bis(dialkylaminoalkyl)mercaptals and congeners. 3,857,888, Cl. 260-570.50s.

Krupin, Fred; Beiswanger, John P. G.; and Nassry, Assadullah, to GAF Corporation. Slushing oil or rust inhibiting compositions. 3,857,789, Cl. 252-33.400.

Kubota, Hayata: *See—*
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Kubota, Tatsushi: *See—*
Kaneko, Yuichiro; Teraoka, Fuminori; Kubota, Tatsushi; and Nishikawa, Takehiko, 3,857,581.

Kubu, Naomi, to Usui Kokusai Sangyo Kabushiki Kaisha. Corrosion-resistant double-coated steel material. 3,857,684, Cl. 29-196.500.

Kugele, Thomas G.: *See—*
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Kugelmann, Adolf; Conzelmann, Gerhard; Henninger, Ewald; Meyer, Dieter; and Seiler, Hartmut, to Bosch, Robert, G.m.b.H. Vehicle blink pulse generator manufacturable on an integrated circuit basis. 3,858,177, Cl. 340-73.000.

Kuhle, Engelbert; Siegle, Peter; Behrenz, Wolfgang; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. N-carboxylated N-methylcarbamic acid aryl esters. 3,857,860, Cl. 260-346.20r.

Kuhnpast, Rainer: *See—*
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Kuhrt, Friedrich; and Schreiner, Horst, to Siemens Aktiengesellschaft. Contact member for semiconductor device having pressure contact. 3,858,096, Cl. 357-79.000.

Kulas, Finn Ragnar; and Ekeland, Terje, to Norsk Hydro a.s. Method for obtaining a controlled increase of the density of porous polymers. 3,857,801, Cl. 260-2.50b.

Kuninaga, Minoru: *See—*
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Kuntz, Leland, to Honeywell Inc. Proportional frame twist slope control. 3,857,577, Cl. 280-6.100.

Kuppersbusch, F., & Sohne AG: *See—*
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Kuramoto, Yukimasa: *See—*
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Kurichh, Sham L., to Midland-Ross Corporation. Air brake antiskid control. 3,857,614, Cl. 303-21.00f.

Kushida, Masagoro: *See—*
Yamashita, Makoto; Ikura, Kenkichi; and Kushida, Masagoro, 3,857,632.

Kuter, Heinrich; and Lenting, Hans, to Kraftwerk Union Aktiengesellschaft. Exciter assembly for electric machines with revolving rectifiers. 3,858,069, Cl. 310-68.00d.

La Barge, Robert L.; and Leftault, Charles J., Jr., to Aluminum Company of America. Safety closure and container. 3,857,508, Cl. 215-221.000.

La Telemecanique Electrique: *See—*
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Labadini, William M.: *See—*
Anderson, Warren A.; Labadini, William M.; and Passmore, Edmund M., 3,858,086.

Lablans, Johannes Franciscus: *See—*
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Laboratories Cassenne: *See—*
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Laborde, Enos J., Jr.: *See—*
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Laborde, Richard C.: *See—*
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Lacan, Guy Henri; and Haury, Andre Lucien, to La Telemecanique Electrique. System providing power supply connections and interconnections for logic blocks. 3,858,155, Cl. 339-22.00r.

Lackey, Robert P., to Texas Instruments Incorporated. Reduced actuation time thermal relay system. 3,858,141, Cl. 337-140.000.

Laferty, John M.: *See—*
Kim, Tat K.; Laferty, John M.; Macinnis, Martin B.; Patton, James C.; and Quatrini, L. R., 3,857,928.

L'Air Liquide, Societe Anonyme pour l'Etude et Exploitation des Procedes Georges Claude: *See—*
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Landeluddeke, Peter: *See—*
Horlein, Gerhard; Schonowsky, Hubert; Gassner, Georg Gustav; Landeluddeke, Peter; and Studeneer, Adolf, 3,857,836.

Lane, David Silvester: *See—*
Salvin, Keith Thomas; and Lane, David Silvester, 3,858,011.

Lang, Gerard, to Societe Anonyme dite: L'Oreal. Process for the preparation of di-lower alkoxy-3,5-phthalic anhydrides. 3,857,861, Cl. 260-346.600.

Larkin, William A.; Ringwood, Robert C., Jr.; and Treadwell, Kenneth, to M & T Chemicals Inc. Barium carbonate as modifies for certain non-rigid polyurethane foams. 3,857,802, Cl. 260-2.0be.

Larson, Arnold W. G.: *See—*
Arp, Ewald A., 3,857,334.

Larsson, Arne Erik Alvar. Apparatuses for making devices, such as alarm devices, operative. 3,858,131, Cl. 335-136.000.

Lassig, Harry; and Grosshauser, Anton, to Fordertechnische Furschungsgesellschaft mbH. Apparatus for loading containers with cargo. 3,857,501, Cl. 214-41.000.

Launius, Clifford G. Control circuit utilizing temperature actuated switches and silicon controlled rectifiers for reversing the polarity of direct current applied to a load. 3,858,106, Cl. 321-45.00r.

Laveen, Eric G.: *See—*
Leveen, Harry H., 3,857,140.

Laveen, Robert F.: *See—*
Leveen, Harry H., 3,857,140.

Le Cren, Roger. Dynamic weighing apparatus. 3,857,488, Cl. 209-73.000.

Le Maux, Gilles R.: *See—*
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Leigh, Thomas, to Imperial Chemical Industries Limited. Isolation process. 3,857,889, Cl. 260-570.700.
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Lemelson, Jerome H.; and Elfman, Allan M. Adhesive surface dart and shock absorbing target. 3,857,566, Cl. 273-95.00r.
Lenderman, Alton L., to Deering Milliken Research Corporation. Yarn take-up. 3,857,523, Cl. 242-18.0dd.
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Lutz, Eugen, Jr.: *See—*
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Macomber, Bennie D.; and Gravelle, Noel D., to United States of America, Navy. Range sensing target detecting device (U). 3,858,207, Cl. 343-7.0pf.

Madrid, Robert W.; and Hagenbach, Robert J. Electrostatic developer mixture with a coated carrier. 3,857,792, Cl. 252-62.100.

Magdo, Ingrid E.; and Magdo, Steven, to International Business Machines Corporation. Dielectrically isolated schottky barrier structure and method of forming the same. 3,858,231, Cl. 357-15.000.

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Mancy, Denise; Florent, Jean; and Lunel, Jean, to Rhone-Poulenc S.A. Antibiotics 23,671 RP and 23,672 RP. 3,857,937, Cl. 424-120.000.

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Marshall, Winston S., to Lilly, Eli, and Company. Anti-inflammatory agents. 3,857,955, Cl. 424-340.000.

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Martin, Frank J.; and Holbrook, Rex R., to Chrysler Corporation. Vacuum delay valve. 3,857,373, Cl. 123-117.00a.

Martin, Guy E., to Aluminum Company of America. Non-rotatable tube pay-off apparatus. 3,857,269, Cl. 72-287.000.

Martin, Henry; and Drabek, Jozef, to Ciba-Geigy AG. Process for the manufacture of phosphoric acid esters and phosphonic acid esters. 3,857,907, Cl. 260-982.000.

Martin Marietta Corporation: *See*—
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Martinez, Sylvia, to SINDCO. Apparatus for applying and drying chromatographic samples. 3,857,784, Cl. 210-198.00c.

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Mascolo, Benjamin R.; deceased (by Mascolo, Peter R.; executor), to Kleer-Vu Industries, Inc. Display device. 3,857,192, Cl. 40-158.000.

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Mascuch, Joseph J. Anti-jackknife device hitch. 3,857,586, Cl. 280-432.000.

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Mason, Peter J.; and Shuey, David R., to Xerox Corporation. Filter for selective speed xerographic printing in facsimile transceivers and the like. 3,858,004, Cl. 178-7.600.

Mason, Samuel H. Helicopter self-leveling landing gear. 3,857,533, Cl. 244-17.170.

Maspero, Federico; Perrotti, Emilio; and Simonetti, Franco, to Snam Progetti S.p.A. Olefin metallorganic complexes of saline type and process for the preparation thereof. 3,857,867, Cl. 260-429.00r.

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Maynard, Robert Nelson, to Huber, J. M., Corporation. Method of rapid differential flocculation of TiO_2 from kaolin slurries. 3,857,781, Cl. 209-5.000.

McClernon, Francis H. Contact lens filing and reclassifying card. 3,857,480, Cl. 206-5.100.

McCoy, Wallace W. Structural member employing random honeycomb structure. 3,857,752, Cl. 161-161.000.

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McGinniss, Vincent Daniel, to SCM Corporation. Photopolymerizable coating compositions and process for making same which contains a thioxanthone and an activated halogenated azine compound as sensitizers. 3,857,769, Cl. 204-159.240.

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McGriffin, Kenneth. Process of extracting metals from solutions. 3,857,703, Cl. 75-109.000.

McInerny, George P., to Pennsylvania Research Associates, Inc. Mechanism for feeding, separating and stacking sheets. 3,857,559, Cl. 271-122.000.

McIntyre, Thomas. Prime movers. 3,857,240, Cl. 60-221.000.

McKee, Arvil B.; Brown, Robert H.; and Horst, Ralph L., to Aluminum Company of America. Aluminum alloy container end and sealed container thereof. 3,857,973, Cl. 426-122.000.

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McLaughlin, Donald W.; and Makantassis, Panayote D., to GTE Automatic Electric Laboratories, Incorporated. Error detection recording technique. 3,858,179, Cl. 340-146.10r.

McMahon, Maurice T., Jr.: *See*—
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Meeker, Brian Lee, to Johns-Manville Corporation. Air duct. 3,857,590, Cl. 285-305.000.

Meeker, Donald W. Method of making towel bibs. 3,857,116, Cl. 2-50.000.

Meeusen, Pieter, to Nielsen, H., & Son Maskin-Fabrik A/S. System of and a method for transporting heavy or bulky articles. 3,857,478, Cl. 198-195.000.

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Melead, James J.; and Zink, Stanley C., to Beloit Corporation. Surface enveloper transfer winder. 3,857,524, Cl. 242-56.00r.

Merker, Reuven; and Lucca, Salvatore, to Metalux Corporation, The. Purification of nickel and cobalt electroplating solutions. 3,857,765, Cl. 204-49.000.

Merrill, Roger F., Jr.; and Courtney, Henry R., to Minnesota Mining and Manufacturing Company. Acrylate microsphere-surfaced sheet material. 3,857,731, Cl. 117-122.0pa.

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Merriweather, Kenneth A.; and Benzuly, Harold J., to Warwick Electronics Inc. Extended rang AFC system. 3,858,000, Cl. 178-5.8af.

Metaframe Corporation: *See—*
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Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 2-Amino-1, 4- dihydropyridine derivatives. 3,857,849, Cl. 260-294.80d.

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Mikami, Yasushi, to Alps Electric Co., Ltd. Shaft mounting apparatus. 3,857,644, Cl. 403-196.000.

Miki, Yukio, to Minolta Camera Kabushiki Kaisha. Trick photographing device for motor driven motion picture. 3,858,230, Cl. 354-91.00s.

Mila, Truman R., to GTE Automatic Electric Laboratories, Incorporated. Arrangement for combining high and low level signals within a single frame with a noise separating fuse panel. 3,858,093, Cl. 317-122.000.

Miles, Gilbert Dwayne: *See—*
Baldwin, Marshall Glenn; and Miles, Gilbert Dwayne, 3,857,509.

Miles, Robert A.: *See—*
Friedl, Wendel M.; Miles, Robert A.; Allen, John W.; and Waiwood, William P., 3,858,116.

Miller, Bernard F., to Ingersoll-Rand Company. Flexible or universal coupling means. 3,857,642, Cl. 403-57.000.

Miller, Frederick Henry, Jr. Adjustable animal maze device. 3,857,364, Cl. 119-1.000.

Miller, Gerald K.; Bull, Dale L.; and Rautiola, Norman A., to Nartron Corporation. Electrical switch assembly. 3,858,176, Cl. 340-73.000.

Miller, Robert L.; and Fisset, Louis M., to Ex-Cell-O Corporation. Toothed forming tool. 3,857,273, Cl. 72-469.000.

Miller, William Francis; and Wells, Edward Marshall, to Marconi Company Limited, The. Microwave transmission employing time staggered frequency modulation at an array of radiators. 3,858,215, Cl. 343-102.000.

Milliken, Paul E., to Goodyear Tire & Rubber Company, The. Inflatable shelter and flexible wall therefor. 3,857,209, Cl. 52-2.000.

Minnesota Mining & Manufacturing Co.: *See—*
Knapp, Philip B., 3,857,659.

Minnesota Mining and Manufacturing Company: *See—*
Bazille, James H., Jr., 3,858,157.
Blackley, William D.; Castle, Richard B.; and Berntson, Leslie G., 3,857,905.
Merrill, Roger F., Jr.; and Courtney, Henry R., 3,857,731.
Winter, Phillip M.; and Gardner, Gary A., 3,857,750.

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Mintecatini Edison S.p.A.: *See—*
Fiore, Leonardo; Nissim, Giorgio; and Corrado, Francesco, 3,857,759.

Miracki, Zdzislav Stanislav: *See—*
Glikin, Paul Edgar; Miracki, Zdzislav Stanislav; and Phillips, Ronald, 3,857,374.

Misaki, Masaru; Tsujimoto, Yukizo; Nakagawa, Tatuo; Sukenari, Junko; and Moritaka, Shintaro, to Takeda Chemical Industries, Ltd. Method for preparing jellified foods. 3,857,975, Cl. 426-167.000.

Misencik, John J., to Westinghouse Electric Corporation. Ground fault circuit breaker with cold temperature bimetal construction. 3,858,130, Cl. 335-18.000.

Mishcon, Lester: *See—*
Agulnek, Harry; and Mishcon, Lester, 3,857,258.

Misslin, Raphael Charles, to Ciba-Geigy AG. Blister package. 3,857,487, Cl. 206-463.000.

Mitchell, Graham R., to General Electric Company. Vacuum-type circuit interrupter with interleaving spiral electrodes. 3,858,076, Cl. 313-217.000.

Mito, Kunimasa. Gyroscopic holder for camera. 3,858,228, Cl. 354-293.000.

Mitsubishi Rayon Co., Ltd.: *See—*
Higashimura, Einosuke; Sekimoto, Yukihiko; and Hatabu, Eizi, 3,857,991.

Mitsui, Hiroshi: *See—*
Kagiya, Tsutomu; Mitsui, Hiroshi; Tsuneta, Kazuyoshi; and Mihara, Hiroshi, 3,857,768.

Mitsui, Norihiko: *See—*
Mori, Akihiro; and Mitsui, Norihiko, 3,857,555.

Mitsui, Ryoichi: *See—*
Tamura, Nobuhiro; Mitsui, Ryoichi; Watanabe, Seizaburo; and Kazuo, Suga, 3,857,921.

Mittelrheinische Metallgiesserei H. Beyer KG: *See—*
Schmitz, Willi, 3,857,167.

Miyake, Hajimu: *See—*
Hayashi, Masaki; and Miyake, Hajimu, 3,857,831.

Miyake, Minoru. Simplified construction. 3,857,213, Cl. 52-86.000.

Miyama, Hiroshi; and Tomii, Kaoru, to Matsushita Electric Industrial Company Limited. Color camera tube having a color strip filter. 3,858,079, Cl. 313-372.000.

Miyamoto, Akio: *See—*
Kohyama, Masaharu; Miyamoto, Akio; Kobayashi, Satoshi; and Kanazaki, Mikio, 3,858,073.

Miyamoto, Koichi: *See—*
Katayama, Hajime; Nitanda, Hiroshi; and Miyamoto, Koichi, 3,857,189.

Miyasaka, Yoshiteru; and Masuda, Yuichi, to Nippon Light Metal Research Laboratory, Ltd. Small grain promoting aluminum-titanium-boron mother alloy. 3,857,705, Cl. 75-138.000.

Miyata, Kenzi; and Kamei, Tatsuya, to Hitachi, Ltd. Light-receiving semiconductor device. 3,858,233, Cl. 357-30.000.

Miyazaki, Yukio: *See—*
Tanaka, Yoshiaki; Saito, Hideo; Miyazaki, Yukio; Sugawara, Hideo; Nagatsu, Junsaku; and Shibuya, Mitsuo, 3,857,948.

Mizutani, Toshio: *See—*
Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Okuno, Yositosi; and Fujimoto, Keimei, 3,857,858.
Ohno, Nobuo; Itaya, Nobushige; Mizutani, Toshio; Okuno, Yositosi; Fujimoto, Keimei; and Kawanami, Toru, 3,857,863.

Mobey, Hubert Brian, to Industrial Reels Limited. Reel. 3,857,530, Cl. 242-118.700.

Mobil Oil Corporation: *See—*
Bustin, Franz, 3,857,144.

Moeres, Reiner: *See—*
Knipp, Ulrich; Boden, Heinrich; Ersfeld, Heinrich; Schneider, Walter; and Moeres, Reiner, 3,857,550.

Moersch, George W.; and Creger, Paul L., to Parke, Davis & Company. Tetramethylalkane derivatives. 3,857,884, Cl. 260-554.000.

Mohr, Robert G.: *See—*
Sheerhorn, Douglas; Van Kuik, Dirk J.; Korell, Donald D.; and Mohr, Robert G., 3,857,621.

Mohr, Robert G.; Hodges, Ronald R.; Scheerhorn, Douglas; Wilcox, Gale F.; and Hockenberry, Jack, to Steelcase Inc. End panel support system. 3,857,622, Cl. 312-257.000.

Moldenhauer, Odilio Lotario: *See—*
Schwartz, Haraldo Alberto; Moldenhauer, Odilio Lotario; and Greenman, Seymour Maurice, 3,857,978.

Mole, Philip J., 40% to Block, Alvin W., Levy, Stephen and Becker, Alvin R. Method and apparatus for emission free operation of by-product coke ovens. 3,857,758, Cl. 201-40.000.

Moline Corporation: *See—*

Fashfellow, George H.; Fauntleroy, Dort; and Goetze, Arnold A., 3,857,297.
Moller, Per Julius Leth: *See—*
Jensen, Jens-Lauge Bolund; Moller, Per Julius Leth; and Mortensen, Anna Birthe, 3,857,988.
Molony, Donald A.: *See—*
Williams, Maryon J., Jr.; Walkowitz, Walter; Fich, Sylvan; Jaron, Dov; Kantrowitz, Adrian; and Molony, Donald A., 3,857,382.
Molybdenum Corporation of America: *See—*
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Monarch Molding, Inc.: *See—*
Cowsert, Charles A., 3,858,152.
Monolithic Systems Corporation: *See—*
De Vries, Hubert G., 3,858,184.
Monroe Auto Equipment Company: *See—*
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Monroe Belgium N.V.: *See—*
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Keijzer, Johan H.; Van den Berg, J. Hans; Pierle, Willy R. J.; and Jossa, Louis Joseph, 3,857,580.
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Monsanto Company: *See—*
Schlepphik, Alfred A., 3,857,898.
Sullivan, Alfred Bay; and Wilder, Gene Ray, 3,857,878.
Walsh, Robert J., 3,857,123.
Montecatini Edison S.p.A.: *See—*
Glatti, Flaviano; Guariento, Manlio; and Cerruti, Ugo, 3,857,804.
Monteil, Andre: *See—*
Mauvernay, Roland Yves; Busch, Norbert; and Monteil, Andre, 3,857,848.
Montory, Daniel A.; and Montory, Katherine L. Yarn measuring cutter. 3,857,143, Cl. 28-2.000.
Montory, Katherine L.: *See—*
Montory, Daniel A.; and Montory, Katherine L., 3,857,143.
Moody, Gene S.: *See—*
Arp, Ewald A., 3,857,334.
Moog Inc.: *See—*
Clark, Daniel C., 3,857,541.
Moon, William T., Jr., to Robertshaw Controls Company. Relay construction and parts therefor or the like. 3,857,411, Cl. 137-627.500.
Moore, Alvin Edward. Can-containing construction member. 3,857,215, Cl. 52-259.000.
Moore Business Forms, Inc.: *See—*
Gill, Edward William; Vincent, Derek Arthur; and Peace, John, ?,857,557.
Moore, Dennis G. Lamp assembly. 3,858,039, Cl. 240-8.300.
Moore, Donald C.; and Tittman, Jay, to Schlumberger Technology Corporation. Well-logging measuring apparatus and method. 3,858,037, Cl. 235-193.000.
Moore, Edward H., to Delaval Turbine, Inc. Flow indicator. 3,857,277, Cl. 73-28.000.
Moore, Francis C.; and Perkinson, Leon R., to Moore-Perk Corporation. Method of sterile packaging. 3,857,677, Cl. 21-58.000.
Moore, Robert C.: *See—*
Roll, Ronald G.; Edwards, Charles R.; Moore, Robert C.; Wagner, George D.; and Burek, Ronald K., 3,858,217.
Moore-Perk Corporation: *See—*
Moore, Francis C.; and Perkinson, Leon R., 3,857,677.
Morelli, Morello; and De Marco, Fortunato, to Snam Progetti, S.p.A. Hydrogenation of cyclic hydrocarbon diolefins to cyclic hydrocarbon olefins. 3,857,894, Cl. 260-666.00a.
Morgan, Edmond L.: *See—*
Sommerfeld, Irwin H.; Morgan, Edmond L.; Allen, Ethan J.; and Dewey, Charles N., 3,857,383.
Morgan, Perry W., Jr.: *See—*
Reid, Edward J.; and Morgan, Perry W., Jr., 3,857,985.
Morgenstern, David M.; deceased (by Morgenstern, Stanley); Chatmann, Harold M.; and Cole, Allan R., to Tenna Corporation. Electric adjusting means for azimuth and elevation adjustment. 3,857,631, Cl. 350-289.000.
Morgenstern, Stanley: *See—*
Morgenstern, David M.; Chatmann, Harold M.; and Cole, Allan R., 3,857,631.
Mori, Akihiro; and Mitsui, Norihiko, to Hitachi, Ltd. Oil buffer. 3,857,555, Cl. 267-34.000.
Morii, Akira: *See—*
Tasaka, Akira; Morii, Akira; and Matoba, Yousuke, 3,857,899.
Morin, Louis F.; and McNeil, Edgar L., to Everflex Products, Inc. Reinforced convoluted tubing of polytetrafluoroethylene. 3,857,415, Cl. 138-122.000.
Moritaka, Shintaro: *See—*
Misaki, Masaru; Tsujimoto, Yukizo; Nakagawa, Tatuo; Sukenari, Junko; and Moritaka, Shintaro, 3,857,975.
Morris, Hugh C., to Caterpillar Tractor Company. Transmission and speed controlled lock-up clutch. 3,857,302, Cl. 74-733.000.
Morris, Philip, Incorporated: *See—*
Iten, Clemens A., 3,857,270.
Stevens, William Henry, II, 3,857,178.
Morrison, George W.: *See—*
George, Robert D.; Banner, Alvin D.; and Morrison, George W., 3,857,172.
Morrison, William McKenzie Meek, to Turner Manufacturing Company Limited. Control mechanisms for gear boxes. 3,857,299, Cl. 74-473.00r.
Morrow, James J.; and Bailey, Leo L., to Fischer & Porter Co. Continuous analysis for copper concentration. 3,857,762, Cl. 204-1.00t.
Mortensen, Anna Birthe: *See—*
Jensen, Jens-Lauge Bolund; Moller, Per Julius Leth; and Mortensen, Anna Birthe, 3,857,988.
Morton, Peter Harlow; Wortley, John Philip Atkinson; and Woolcock, Alan, to Imperial Metal Industries (Kynoch) Limited. Cathodes for electrolytic cell. 3,857,774, Cl. 204-242.000.
Morton, Robert Earl: *See—*
Pitts, Thomas Edgar; Morton, Robert Earl; and Teixeira, Manuel G., 3,857,529.
Morton-Norwich Products, Inc.: *See—*
White, Ralph L., Jr., 3,857,835.
Woodruff, Douglas, 3,857,126.
Mosebach Manufacturing Company: *See—*
Kirilloff, Victor V., 3,858,149.
Moss, James R., to Coors Porcelain Company. Method for manufacturing composite articles containing boron carbide. 3,857,744, Cl. 156-60.000.
Motoren- und Turbinen-Union Munchen GmbH: *See—*
Wydra, Gerhard; and Puchinger, Franz, 3,857,717.
Motorola, Inc.: *See—*
Davis, William F., 3,858,062.
Gurtler, Richard Warren; and Zwernemann, Ross Wayne, 3,858,150.
Henry, Tim Warren, 3,858,200.
Olson, Richard O., 3,858,234.
Moulin, Michel: *See—*
Bastard, Gilbert; and Moulin, Michel, 3,857,470.
Mounce, George R. Sailing vessel self-steering system. 3,857,353, Cl. 114-144.00c.
Mouttet, Andre, to Regie Nationale des Usines Renault and Ste des Automobiles Peugeot. Epicyclic gear boxes. 3,857,303, Cl. 74-761.000.
Mowbray, Dorian Farrar, to C.A.V. Limited. Fuel injection pumping apparatus. 3,857,653, Cl. 417-499.000.
Mower, Lawrence N., to Amoco Production Company. Controlled casing sleeve. 3,857,445, Cl. 166-285.000.
Mueller, Ferd A., to Colorado Refractories Corporation. Hot top installation method. 3,857,160, Cl. 29-463.000.
Mueller, Juergen: *See—*
Stievenart, Emile Frans; and Mueller, Juergen, 3,858,229.
Mueller, Paul H. Window mounted platform. 3,857,365, Cl. 119-1.000.
Muller, Klaus: *See—*
Voellmin, Siegfried; and Muller, Klaus, 3,858,114.
Mullin, Clayton D., to Textron, Inc. 1 DB step attenuator. 3,858,128, Cl. 333-81.00r.
Mumford, G. Victor; and Williams, Richard C., to Owens-Illinois, Inc. Safety closure. 3,857,505, Cl. 215-9.000.
Murata Kikai Kabushiki Kaisha: *See—*
Nakahara, Teiji; Ueda, Misao; Kuninaga, Minoru; and Junichi, Teranishi, 3,857,228.
Muri, Robert A.; and Laborde, Richard C. Plex spring contact switch for push buttons. 3,858,019, Cl. 200-159.00a.
Muzsnay, Laszlo, to Societe anonyme dite: Plastimonde. Apparatus for injection molding. 3,857,658, Cl. 425-145.000.
Naarmann, Herbert: *See—*
Becker, Ernst; Naarmann, Herbert; Schneider, Jurt; and Kessler, Hellmuth, 3,857,821.
Nabisco, Inc.: *See—*
Griner, Arthur J., 3,857,331.
Naeyaert, Roger S.: *See—*
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Nagano, Hiroyuki: *See—*
Shindo, Minoru; Kakimoto, Morio; and Nagano, Hiroyuki, 3,857,887.
Nagata, Wataru; and Hayase, Yoshio, to Shiongi & Co., Ltd. Reagents for aldehyde synthesis. 3,857,834, Cl. 260-239.55c.
Nagatsu, Junsaku: *See—*
Tanaka, Yoshiaki; Saito, Hideo; Miyazaki, Yukio; Sugawara, Hideo; Nagatsu, Junsaku; and Shibuya, Mitsuo, 3,857,948.
Najer, Henry; Manoury, Philippe Michel Jacques; Fernand, Andre Pierre; and Giudicelli, Don Pierre Rene Lucien, to Synthelabo. Pharmaceutical compositions containing piperazine derivatives in the treatment of pain. 3,857,945, Cl. 424-250.000.
Nakagawa, Shiro; Nakamoto, Soichi; Takishima, Yoshiyuki; Taguchi, Tetsuya; and Kakunodate, Masamichi, to Canon Kabushiki Kaisha and TDK Electronics Co., Ltd. Exposure value storage device. 3,858,226, Cl. 354-60.000.
Nakagawa, Tatuo: *See—*
Misaki, Masaru; Tsujimoto, Yukizo; Nakagawa, Tatuo; Sukenari, Junko; and Moritaka, Shintaro, 3,857,975.
Nakahara, Teiji; Ueda, Misao; Kuninaga, Minoru; and Junichi, Teranishi, to Murata Kikai Kabushiki Kaisha. Twisting frame. 3,857,228, Cl. 57-56.000.
Nakajima, Yosuke: *See—*
Ohi, Reiichi; Sugiyama, Mitsunori; Nakajima, Yosuke; Lorie, Michio; and Kobayashi, Shigeru, 3,857,711.
Nakamoto, Soichi: *See—*
Nakagawa, Shiro; Nakamoto, Soichi; Takishima, Yoshiyuki; Taguchi, Tetsuya; and Kakunodate, Masamichi, 3,858,226.

Nakamura, Kihei; Yamazaki, Harumichi; Takeguchi, Kazuo; and Kondo, Yoshikazu, to Bridgestone Tire Company Limited. Automobile bumper assembly. 3,857,596, Cl. 293-88.000.

Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, to Tokyo Shibaura Electric Co., Ltd. Semiconductor devices containing as impurities as and P or B and the method of manufacturing the same. 3,858,238, Cl. 35763.000.

Nakamura, Takeshi: *See—*
Takiguchi, Sunichi; Satoyoshi, Yasuhiko; Hamada, Shinji; Nakamura, Takeshi; Koba, Sadaaki; and Shimoda, Noboru, 3,857,153.

Nakamura, Toshiaki, to Yamaha Hatsudoki Kabushiki Kaisha. Oil pump driving arrangement for a separate engine lubricating system of a small-sized internal combustion engine. 3,857,378, Cl. 123-196.00r.

Nakano, Eiichi: *See—*
Kikuchi, Mamoru; Sakaguchi, Kenji; and Nakano, Eiichi, 3,857,967.

Nakata, Yasuyuki: *See—*
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Nalco Chemical Company: *See—*
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Nally, Glenn M.: *See—*
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Namba, Kazuo: *See—*
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Nartron Corporation: *See—*
Miller, Gerald K.; Bull, Dale L.; and Rautiola, Norman A., 3,858,176.

Nassry, Assadullah: *See—*
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National Research Institute for Metals, The Director of: *See—*
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National Starch and Chemical Corporation: *See—*
Szymanski, Chester D.; Tessler, Martin M.; and Bell, Harvey, 3,857,976.

National Steel Corporation: *See—*
Wondris, Erich F., 3,857,434.

National Telephone Supply Company, The: *See—*
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Naturvard Research (Canada) Ltd.: *See—*
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NCR Corporation: *See—*
Fellows, Charles F., 3,857,720.

Neale, Dory J., Sr., to National Telephone Supply Company, The. Noncorrosive cable shield bond. 3,857,994, Cl. 174-78.000.

Nefedov, Askold Ivanovich: *See—*
Avrutin, July Davidovich; Gebel, Iosif Davydovich; Nefedov, Askold Ivanovich; and Khilevich, Solomon Abramovich, 3,857,207.

Nelson, Theodore M.; and Goldie, Harry, to Westinghouse Electric Corporation. Receiver protection method and apparatus. 3,858,125, Cl. 333-13.000.

Neugebauer, Gerhard, to Alexander Wiegand Armaturen-und Manometerfabrik. Manometer with safety device. 3,857,288, Cl. 73-416.000.

Neumann, Otto Walter, to Amsted Industries Incorporated. Snubbed bolster. 3,857,341, Cl. 105-197.0db.

Neuner, James A.; Thompson, Francis T.; and Vercellotti, Leonard C., to Westinghouse Electric Corporation. Digital multiplexed position indication and transmission system. 3,858,191, Cl. 340-188.00r.

Neuner, James A.; and Traversi, Maurizio, to Westinghouse Electric Corporation. Tracking level detector. 3,858,199, Cl. 340-347.0ad.

New Hampshire Ball Bearings, Inc.: *See—*
Mason, Mark T., 3,857,639.

New York Wire Mills Corporation: *See—*
Borodin, Daniel J.; and Henry, Mort W., 3,857,416.

Newman, Reginald F., to Electronic Memories & Magnetics Corporation. Circuit module lead forming machine. 3,857,420, Cl. 140-71.00r.

Newport Pharmaceuticals, Inc.: *See—*
Gordon, Paul, 3,857,940.

Niehaus, William R., to Scripps, E. W., Company, The. System and apparatus for exposing photosensitive engraving plates. 3,857,635, Cl. 355-132.000.

Nielsen, H., & Son Maskin-Fabrik A/S: *See—*
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Niizeki, Nobukazu: *See—*
Inamura, Takahiro; Sawamoto, Kenichi; Niizeki, Nobukazu; Tsunekawa, Munehisa; and Nakata, Yasuyuki, 3,857,713.

Nikl, Siegfried: *See—*
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Nikolaev, Valentin Pavlovich: *See—*
Voitsekhovsky, Bogdan Vyacheslavovich; Nikolaev, Valentin Pavlovich; and Shoikhet, Grigory Yankelevich, 3,857,272.

Nini, Raymond B. Combination ladder and tool cart. 3,857,460, Cl. 182-17.000.

Nipe, Richard N., to Standard Oil Company (Indiana). Grease composition. 3,857,797, Cl. 252-47.500.

Nippon Air Brake Company Ltd.: *See—*
Arikawa, Tetsuro, 3,857,613.

Nippon Electric Company, Limited: *See—*
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Nippon Electric Varian, Ltd.: *See—*
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Nippon Kayaku Kabushiki Kaisha: *See—*
Aoki, Yukio; Yoshida, Susumu; Kato, Shoichi; Inada, Satoshi; and Ishida, Shuichi, 3,857,954.
Takenaka, Shigeo; Shimizu, Hitoshi; and Ogawa, Masanobu, 3,857,796.

Nippon Light Metal Research Laboratory, Ltd.: *See—*
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Nippon Selfoc Company, Limited: *See—*
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Nippon Steel Corporation: *See—*
Gondo Hisashi; Takechi, Hiroshi; Kawano, Tsuyoshi; Namba, Kazuo; Masui, Hiroaki, Ozaki, Koji; Uchida, Shunichi; and Sakurai, Koichi, 3,857,740.

Nippondensco Co., Ltd.: *See—*
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Nishikawa, Takehiko: *See—*
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Nishimura, Shiro; and Ishihama, Kisaburo, to Shin Nippon Machinery Co., Ltd. Suspended type centrifugal separator. 3,857,783, Cl. 210-138.000.

Nissan Motor Company, Limited: *See—*
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Kishimoto, Kyuji; and Sawada, Hiraki, 3,857,368.

Nissim, Giorgio: *See—*
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Nitanda, Hiroshi: *See—*
Katayama, Hajime; Nitanda, Hiroshi; and Miyamoto, Koichi, 3,857,189.

Nittan Kohki Kabushiki Kaisha; a/k/a Nittan Konki Co., Ltd.: *See—*
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Nitto Chemical Industry Co., Ltd.: *See—*
Higashimura, Einosuke; Sekimoto, Yukihiko; and Hatabu, Eizi, 3,857,991.

Nitto Electric Industrial Co., Ltd.: *See—*
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Niwa, Kazuo: *See—*
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Noda Institute for Scientific Research: *See—*
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Noda, Yuzuru: *See—*
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Noe, Robert Joseph: *See—*
Verhille, Karel Eugeen; and Noe, Robert Joseph, 3,857,708.

Nohava, Theodore J.; and Girsh, David C. Tricycle antitipping device. 3,857,584, Cl. 280-293.000.

Nora Sewing Machine Industrial Co., Ltd.: *See—*
Matsumoto, Mitsuo, 3,857,347.

Noren, Carl Anders: *See—*
Taylor, Nicholas Simon Hall; and Noren, Carl Anders, 3,857,516.

Norsk Hydro a.s.: *See—*
Kulas, Finn Ragnar; and Ekeland, Terje, 3,857,801.

North American Rockwell Corporation: *See—*
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Norton, Morrison Kai; and Timko, Lawrence Reymond, to Titan Trailer Corporation. Anchor for trailer supported hopper. 3,857,608, Cl. 298-35.00m.

Nowak, Bernard E.: *See—*
Economy, James; Cottis, Steve G.; and Nowak, Bernard E., 3,857,814.

Nowak, Robert M.; and Ginter, Thomas O., to Dow Chemical Company, The. Unsaturated polyester compositions and thermoset articles prepared therefrom. 3,857,812, Cl. 260-40.00r.

Nozaki, Kenzie, to Shell Oil Company. Production of diethyl ketone. 3,857,893, Cl. 260-597.00a.

Nunlist, Erwin J.; Pontes, Lionel J.; and Irving, Gus M., Jr., to Sybron Corporation. Automatic filtermass press. 3,857,336, Cl. 100-269.000.

NUS Corporation: *See—*
Troy, Joseph C., 3,857,551.

N.V. Olvis: *See—*
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Oak Industries Inc.: *See—*
den Toonder, Pieter, 3,857,997.
Jedynak, Leo; and Bert, Paul A., 3,858,194.

Obayashi, Mikio: *See—*
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Obenreder, Robert J., to PPG Industries, Inc. Surface distortion analyzer. 3,857,637, Cl. 356-120.000.

O'Brien, John Butler; Woolf, Cyril; and Dear, Robert Ernest Arthur, to Allied Chemical Corporation. Perfluoro-tertiary-alkanol compounds as fumigants. 3,857,957, Cl. 424-343.000.

O'Dell, David L.; and Shaffer, Leo A., to Wheelabrator-Frye Inc. Folding handwheel handle. 3,857,300, Cl. 74-557.000.

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Ogawa, Masanobu: *See—*
Takenaka, Shigeo; Shimizu, Hitoshi; and Ogawa, Masanobu, 3,857,796.

Ogle, Robert W., to IMS Limited. Intravenous container with dislodgeable septum and dislodging piercer. 3,857,392, Cl. 128-214.00c.

Ogura Clutch Co., Ltd.: *See—*
Iritono, Yoshihisa; and Sakurai, Mitsuo, 3,857,468.

O'Hare, David Hugh: *See—*
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Ohi, Reiichi; Sugiyama, Mitsunori; Nakajima, Yosuke; Horie, Michio; and Kobayashi, Shigeru, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsion sensitized with a heterocyclic compound containing 4-sulfur atoms. 3,857,711, Cl. 96-107.000.

Ohlson, Karl Gunnar. Asphalt mixing plants for making asphalt concrete mix. 3,857,552, Cl. 259-156.000.

Ohno, Nobuo; Itaya, Nobushige; Mizutani, Toshio; Okuno, Yositosi; Fujimoto, Keimei; and Kawanami, Toru, to Sumitomo Chemical Company, Limited. Certain furylmethyl and thenyl esters of certain cyclopropane carboxylic acids. 3,857,863, Cl. 260-347.400.

Ohta, Tomozo; and Makino, Syoji, to Oki Electric Industry Co., Ltd. Negative resistance oscillator. 3,858,123, Cl. 331-107.00r.

Ohtani, Toshio; Sato, Takahiro; and Sumitomo, Fukishi, to Toyo Kogyo Co., Ltd. Exhaust gas outlet means for an internal combustion engine. 3,857,458, Cl. 181-43.000.

Oka, Michio: *See—*
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Oki Electric Industry Co., Ltd.: *See—*
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Yokokowa, Toshiki; and Kawakita, Chihiro, 3,857,175.

Okuno, Yositosi: *See—*
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Ohno, Nobuo; Itaya, Nobushige; Mizutani, Toshio; Okuno, Yositosi; Fujimoto, Keimei; and Kawanami, Toru, 3,857,863.

Okuto, Yuji, to University of Southern California. Method of making junction diodes. 3,857,169, Cl. 29-590.000.

Olashaw, William Francis; and Wilbur, Roger Thomas, to General Electric Company. Switchboard with improved busbar mounting and load strap feed-through provisions. 3,858,092, Cl. 317-120.000.

Oliver, Brian H.: *See—*
Custer, Harry S.; and Oliver, Brian H., 3,857,775.

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Ferlito, Guiseppe, 3,857,363.

Olson, Donald O. Pressure regulator. 3,857,407, Cl. 137-495.000.

Olson, Richard O., to Motorola, Inc. Transistor having improved safe operating area. 3,858,234, Cl. 357-34.000.

OMEGA Louis Brandt & Frere S.A.: *See—*
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O'Neill, Charles Edward: *See—*
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Ono Pharmaceutical Co., Ltd.: *See—*
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Oostenbrink, Albertus Anthony, to Industriele Onderneming Wavin N.V. Pipe connection with clamping ring. 3,857,589, Cl. 285-110.000.

Osbond, John Mervyn; and Wickens, James Charles, to Hoffmann-La Roche Inc. Cyclopropane carboxylic acid esters. 3,857,872, Cl. 260-468.00h.

Osder, Stephen S., to Sperry Rand Corporation. Monitor for the elastic mode stabilizing channels of an automatic flight control system. 3,857,535, Cl. 244-77.00m.

Otto, Charles W., to General Electric Company. Dynamoelectric machine. 3,858,067, Cl. 310-42.000.

Otto, Gary N.: *See—*
Chen, Di; and Otto, Gary N., 3,857,734.

Otto, Jurgen: *See—*
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Owens-Corning Fiberglas Corporation: *See—*
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Packard Instrument Company, Inc.: *See—*
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Palazzo, Giuseppe, to Aziende Chimiche Ruinite Angeline Francesco A.C.R.A.F. S.p.A. 1-[3-(4-Metachlorophenyl-1-piperazinly)-propyl]-3, 4-diethyl—Δ2-1,2,4-triazolin-5-one. 3,857,845, Cl. 260-268.0ph.

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Paludetti, Antonio: *See—*
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Panas, Walter: *See—*
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Pansky, Emil J.; and Dean, Donald G., to Whittaker Corporation. Wheel and alignment assembly. 3,857,611, Cl. 301-9.0dn.

Panzeri, Cesare, to Consiglio Nazionale delle Ricerche. Extenstometric torque meter for measuring small torques. 3,857,280, Cl. 73-136.00a.

Paoli, Stephen A. Machine for producing high grade coarse ground lean meat. 3,857,518, Cl. 241-68.000.

Pappalardo, Romano G.; and Ahmed, Samir A., to GTE Laboratories Incorporated. Flourescent organic compound laser. 3,857,793, Cl. 252-301.30r.

Parent, Edgar, to Celanese Canada Limited. Yarn sensing device. 3,858,013, Cl. 200-61.130.

Parke, Davis & Company: *See—*
Holmes, Ann; and Meyer, Robert F., 3,857,891.
Moersch, George W.; and Creger, Paul L., 3,857,884.

Parke, Donald P.; Priester, Willis M.; Scheidler, Stuart P.; and Goldberg, Gerald M., to Hughes Aircraft Company. Automatic PRF selection to optimize range and doppler visibility in radar tracking. 3,858,208, Cl. 343-7.500.

Parke, Harry G.: *See—*
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Paskert, Joseph Henry, to Eaton Corporation. Flexible conduit connector. 3,858,151, Cl. 339-14.00r.

Passmore, Edmund M.: *See—*
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Pastva, John V., Jr., to Eastern Company, The. Door lock assembly. 3,857,594, Cl. 292-27.000.

Patel, Sumant, to Xerox Corporation. Paper cassette design with irregular bottom. 3,857,558, Cl. 271-22.000.

Patent-Treuhand-Gesellschaft fur electrische Gluhlampen m.b.h.: *See—*
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Pauletich, Joseph. Electric sonic imploder. 3,858,171, Cl. 340-12.00r.

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Peerenboom, Robert J.: *See—*
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Pennsylvania Research Associates, Inc.: *See—*
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Permaloy Corporation: *See—*
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Perronnet, Jacques; and Poittevin, Andre, to Roussel Uclaf. Organophosphate ester derivatives of heterocyclic compounds and process. 3,857,838, Cl. 260-243.00r.

Perrotti, Emilio: *See—*
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Petersen, Carl T.: *See—*
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Peterson, Carl A., to Westinghouse Electric Corporation. Shelf and support arrangement. 3,857,624, Cl. 312-348.000.
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Peterson, Donald H.: *See—*
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Peterson, Donald J., to Procter & Gamble Company, The. Seed protectors. 3,857,942, Cl. 424-245.000.
Petigara, Ramesh B.: *See—*
Yale, Harry Louis; and Petigara, Ramesh B., 3,857,850.
Petrov, Dmitry Andreevich; and Tumanov, Alexie Tikhonovich. Method and apparatus for manufacturing monocrystalline articles. 3,857,436, Cl. 164-60.000.
Petty-Ray Geophysical, Inc.: *See—*
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Plegat, Alain Edouard, to Societe Anonyme des Usines Chausson. Shock-absorber for vehicles and the like. 3,857,595, Cl. 293-71.00r.
Pleyber, Gaetan: *See—*
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Poindexter, Carleton H., to GTE Automatic Electric Laboratories, Incorporated. Electrical protective device using a reed relay. 3,858,089, Cl. 317-16.000.
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Polaroid Corporation: *See—*
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Prust, Michael Ward; and Glassman, Wayne Charles, to Dominion Foundries and Steel Limited. Compositions and processes for producing chromium conversion coatings on surfaces of zinc or cadmium. 3,857,739, Cl. 148-6.160.
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Quenot, Michel, to Stanley-Mabo. Knife with a retractable blade. 3,857,176, Cl. 30-162.000.
Quinn, James L. Light load control for well pump, 3,858,102, Cl. 318-474.000.
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Ream, Ronald L., to Wrigley, Wm., Jr. Company. Method for making a chewing-gum composition. 3,857,965, Cl. 426-3.000.

Recchia, Francesco P.; and Ulrich, Henri, to Upjohn Company, The. Process for preparing methylene-di-anilines. 3,857,890, Cl. 260-570.00d.

Reddy, Redreddy Sukumar; Roth, Carl W.; Rago, Richard A.; and Daugirdas, Kristupas, to Vapor Corporation. Door operator with door panel position sensing and locking device. 3,857,197, Cl. 49-13.000.

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Reed, John A., to Intel Corporation. MOS dynamic memory array and refreshing system. 3,858,185, Cl. 340-173.0dr.

Reed, Robert D.; and Goodnight, Hershel E., to Zink, John, Company. Tri-fuel burner for process gases. 3,857,672, Cl. 431-353.000.

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Rehkopf, Charles; and Speigel, Kenneth, to GTE Sylvania Incorporated. Cathode ray tube screen structure. 3,858,083, Cl. 313-472.000.

Rehkopf, Charles H.; and Speigel, Kenneth, to GTE Sylvania Incorporated. Cathode ray tube screen structure utilizing adjuvant excitation. 3,858,081, Cl. 313-467.000.

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Remec, Matthew J., to Phone-Aid Co., Inc. Line busying circuit. 3,858,008, Cl. 179-18.0ab.

Reps, William F. Lightweight, rigid structural panel for walls, ceilings and the like. 3,857,217, Cl. 52-589.000.

Republic Steel Corporation: *See—*
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Research Laboratories of Australia Pty. Limited: *See—*
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Rigby, Ronald William, to Lucas Aerospace Limited. Electrically operated relief valves. 3,857,544, Cl. 251-133.000.

Riggs & Lombard, Inc.: *See—*
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Ringwall, Carl G., to United States of America, Army, mesne. Notch tracking fluid frequency filter. 3,857,412, Cl. 137-814.000.

Ringwood, Robert C., Jr.: *See—*
Larkin, William A.; Ringwood, Robert C., Jr.; and Treadwell, Kenneth, 3,857,802.

Rishbein, John; Bell, Raymond Henry Bell; Blarke, Anthony James; and Merriman, Peter, to Dunlop Holdings Limited. Flexible polyurethane foams prepared from a mixture of polyether polyols. 3,857,800, Cl. 260-2.5ap.

Ritter, Gerhard: *See—*
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Robbins Company, The: *See—*
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Robbins, Joseph W. Canopy for pickup trucks. 3,857,601, Cl. 296-10.000.

Robbins, Kenneth W.; and Ross, Gerald F., to Sperry Rand Corporation. Closed loop gain control tunnel-diode base band object detector. 3,858,204, Cl. 343-7.0ed.

Robert-Nicoud, Florian, to Mefina S.A. Sewing machine. 3,857,348, Cl. 112-258.000.

Roberts, Gary Francis, to Kartridg Pak Co., The. Piston product filler. 3,857,424, Cl. 141-275.000.

Robertshaw Controls Company: *See—*
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Rodaway, Keith S., to Everest & Jennings, Inc. Swing-away detachable wheelchair footrest. 3,857,606, Cl. 297-429.000.

Rodighiero, Adolfo: *See—*
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Roenspies, Hans-Christian; and Vogt, Manfred, to Kloeckner-Werke AG. Apparatus for advancing conveyors of mining machines in undergroung excavations. 3,857,246, Cl. 61-45.00d.

Rogers, Norman Harold: *See—*
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Rogers, Walter Clark, Jr.; and Snitzer, Morton. Sofa beds. 3,857,121, Cl. 5-29.000.

Roggenkamp, George H.; and Ellis, Walter C., Jr., to Eaton Corporation. Sleeve enclosed coil. 3,858,137, Cl. 336-90.000.

Rogic, Milorad M.; and Fuhrmann, Robert, to Allied Chemical Corporation. Ketone cleavage and products therefrom. 3,857,510, Cl. 260-239.30a.

Rogols, Saul; Hueckel, Edward J.; and Salter, John W., to Staley, A. E., Manufacturing Company. Wet milling of coarse ground wheat and other cereal grains. 3,857,987, Cl. 426-436.000.

Rohan, James E. Fuel vent tank. 3,857,350, Cl. 114-.50r.

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Roll, Ronald G.; Edwards, Charles R.; Moore, Robert C.; Wagner, George D.; and Burek, Ronald K., to United States of America, Navy. Loran assist device. 3,858,217, Cl. 343-103.000.

Ronca, William E., Jr. Topical medicament kit with interlocking components. 3,857,423, Cl. 141-5.000.

Roper Corporation: *See—*
Aasland, Byron T.; Dankel, Douglas D.; and Franklin, Richard W., 3,857,521.

Rose, Samuel, to Bio-Response, Inc. Apparatus for use in the augmentation of the production of antibodies in animals and humans and the collection thereof. 3,857,393, Cl. 128-21.40r.

Rosenberg, Baruch. Cutter head for picking fruit. 3,857,227, Cl. 56-335.000.

Rosenberger, Harold E.; and Young, Ralph B., to Bausch & Lomb Incorporated. Microscope coaxial illumination apparatus. 3,857,626, Cl. 350-91.000.

Rosenwald, Robert H., to Universal Oil Products Company. Inhibiting fungicidal impairment of plant growth. 3,857,959, Cl. 424-346.000.

Ross, Gerald F.: *See—*
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Ross, Gerald F., to Sperry Rand Corporation. Base-band percollision sensor with time domain gating for preventing false responses. 3,858,205, Cl. 343-7.0ed.

Ross, Gerhard; and Reul, Bernhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of a drug dosage form permitting controlled release of active ingredient. 3,857,933, Cl. 424-20.000.

Ross, Walter Lee, to RCA Corporation. Fixed format video data display employing crossed-line pattern format delineation. 3,858,198, Cl. 340-324.0ad.

Roth, Carl W.: *See—*
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Roth, Theodore L. Method of removing natural wax from the skin of fruits and vegetables. 3,857,983, Cl. 426-287.000.
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Rotta Research Laboratorium S.p.A.: *See—*
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Rovati, Luigi; Picciola, Gianpaolo; and Senin, Paolo, to Rotta Research Laboratorium S.p.A. Method of preparing a novel antacid pharmaceutical product. 3,857,938, Cl. 424-156.000.
Rubin, Leo. Electrical cardiac defibrillator. 3,857,398, Cl. 128-419.00d.
Rubricius, Jeanette L.: *See—*
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Ruckstaetter, George A. Apparatus and method for manufacturing a toroid shaped hot dog. 3,857,330, Cl. 99-354.000.
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Ruegg, Edwin, to Maschinenfabrik und Giesserei Netstal AG. Die casting machine. 3,857,440, Cl. 164-341.000.
Rufenacht, Kurt, to Ciba-Geigy Corporation. Pyrido-1,2,3-triazines. 3,857,840, Cl. 260-248.0as.
Ruger, William B.; and Sefried, Harry H., II, to Sturm, Ruger & Co., Inc. Slide guide for rifles. 3,857,323, Cl. 89-191.00r.
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Russell, Herman F., to Hobart Manufacturing Company, The. Meat handling equipment. 3,857,131, Cl. 15-3.170.
Rutter, Henry A. Platform leveling device. 3,857,248, Cl. 61-65.000.
Ryan, Ward H. Sensor of vehicle load or overload. 3,858,173, Cl. 340-52.00r.
Sabet, Huschang. Rotary piston engine with auxiliary chamber on its casing. 3,857,369, Cl. 123-8.130.
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S.A.E.S. Getters S.p.A.: *See—*
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Saiki, Noritsugu; Fujii, Takeshi; and Yamashita, Gentaro, to Teijin Limited. Process for the separation and recovery of methylterephthalic acid and 4-methylisophthalic acid from a mixture thereof. 3,857,881, Cl. 260-525.000.
Saito, Hideo: *See—*
Tanaka, Yoshiaki; Saito, Hideo; Miyazaki, Yukio; Sugawara, Hideo; Nagatsu, Junsaku; and Shibuya, Mitsuo, 3,857,948.
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Saleme, Jose A., to Redlake Corporation. Timed light pulse generator. 3,858,063, Cl. 307-311.000.
Salomon, Georges Pierre Joseph. Method and apparatus for determining the location of a ski binding on a ski in accordance with the size of a skier's boot. 3,857,186, Cl. 33-192.000.
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Salzer, Thomas; and Martin, Charles T., Jr., to Raytheon Company. Monitoring and control means for evaluating the performance of vibratory-type devices. 3,857,279, Cl. 73-67.200.
Sanborn, Duane F.: *See—*
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Sasaki, Toshio; Oka, Michio; and Washio, Yoshiaki, to Toyo Kogyo Co., Ltd. Electroplating apparatus for simultaneously and uniformly electroplating inside surfaces of annular bodies. 3,857,772, Cl. 204-224.00r.
Satake, Toshihiko. Huller. 3,857,333, Cl. 99-601.000.
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Satoh, Yoshiaki; and Funaki, Hidefumi, to Nippon Electric Varian, Ltd. Receiver circuit including a crystal resonator for nuclear magnetic resonance signals of two different frequencies. 3,858,112, Cl. 324-.50r.
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Scanlan, James J.: *See—*
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Scanlon, William B., to Lilly, Eli, and Company. Arylidene cyclanones in inhibiting androgen action. 3,857,953, Cl. 424-331.000.
Scantlin, John R., to Transaction Technology, Inc. Apparatus and method of coding information. 3,858,032, Cl. 235-61.12r.
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Schafer, Anton; and Probst, Karl, to Lindemann Maschinenfabrik GmbH. Hammer breaker for breaking-up bulky refuse material. 3,857,519, Cl. 241-186.00r.
Schafer, Horst; and Herbing, Lothar, to Semikron Gesellschaft fur Gleichrichterbau und Elektronik mbH. Four layer controllable semiconductor rectifier with improved firing propagation speed. 3,858,236, Cl. 357-38.000.
Schaller, Richard J.; and Leshnoff, Stephen D., to Westinghouse Electric Corporation. Inlet vane structure for turbines. 3,857,649, Cl. 415-200.000.
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Schering Corporation: *See—*
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Schermund, Alfred. Folding device for packaging material. 3,857,221, Cl. 53-234.000.

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Schild, Juergen, to Siemens Aktiengesellschaft. Planar four-layer-diode having a lateral arrangement of one of two partial transistors. 3,858,235, Cl. 357-35.000.

Schissler, Lloyd R., to Sperry Rand Corporation. Stable acoustic delay surface wave motion transducer systems. 3,858,064, Cl. 310-8.100.

Schleppnik, Alfred A., to Monsanto Company. 1,(3'-hexenyl)-1-cycloalkanols. 3,857,898, Cl. 260-617.00r.

Schloemann Aktiengesellschaft: *See—*
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Schminke, Wolfgang: *See—*
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Schmitt, James L., to Caterpillar Tractor Company. Bidirectional pump system having plural lubrication circuits. 3,857,461, Cl. 184-6.200.

Schmitz, Willi, to Mittelrheinische Metallgiesserei H. Beyer KG. Method for centrifugally casting an annulus of metal about a hub. 3,857,167, Cl. 29-527.600.

Schneider, Horst; Fergg, Berthold; Zahn, Wolfgang; Friedrich, Hujer; and Erich, Nagel, to Agfa-Gevaert Aktiengesellschaft. Arrangement for processing printing orders. 3,857,220, Cl. 53-59.00r.

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Schneller, Frank. Swingable shelf assembly for cabinets. 3,857,623, Cl. 312-266.000.

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Schuh, Theodore R., to Nalco Chemical Company. Transmission of oil. 3,857,402, Cl. 137-13.000.

Schwab, Helmut; Lin, Chao-Han; and Hoover, Troy Eugene. Mixtures of two chromogenic compounds. 3,857,675, Cl. 8-25.000.

Schwander, Hansrudolf; Buhler, Arthur; and Hindermann, Peter, to Ciba-Geigy AG. Anthraquinone compounds. 3,857,864, Cl. 260-372.000.

Schwartz, Haraldo Alberto; Moldenhauer, Odilio Lotario; and Greenman, Seymour Maurice, to Concentrados Nacionais S.A. Soft drink stabilizer. 3,857,978, Cl. 426-190.000.

Schwender, Charles F.; and Shavel, John, Jr., to Warner-Lambert Company. 3-Hydroxy-5-(3-(substituted-amino)-2-hydroxypropoxy)-benzyl alcohols. 3,857,873, Cl. 260-471.00r.

SCM Corporation: *See—*
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Scott, Frederick, to Hille International Limited. Folding chairs. 3,857,604, Cl. 297-16.000.

Scoubis, John A., to Admiral Corporation. Emitter coupled sync separator. 3,858,003, Cl. 178-7.30s.

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Sefried, Harry H., II: *See—*
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Shand, William A.; and Scherrelies, Wolfgang, to Naturvard Research (Canada) Ltd. Sensor-eye for ultra-violet water sterilizer. 3,858,048, Cl. 250-373.000.

Shank, Joseph L., to Swift & Company. Pressure-sensitive transfer coating. 3,857,718, Cl. 106-288.00q.

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Shannon, Joseph R., Jr. Apparatus for mounting building panels. 3,857,497, Cl. 214-1.00h.

Sharpton, George. Multilevel componential house trailer. 3,857,211, Cl. 52-65.000.

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Sheerhorn, Douglas; Van Kuik, Dirk J.; Korell, Donald D.; and Mohr, Robert G., to Steelcase, Inc. Pedestal lock system. 3,857,621, Cl. 312-219.000.

Shell Oil Company: *See—*
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Shenfeld, Richard Stewart; and Brown, Orville E., to Borden, Inc. Labeling adhesive. 3,857,803, Cl. 260-17.45t.

Shepherd, Thomas H.; and Gould, Francis E. Dry hydrophilic acrylate or methacrylate polymer prolonged release drug implants. 3,857,932, Cl. 424-19.000.

Sherlock, Margaret H.; and Sperber, Nathan, to Schering Corporation. Cyclopropane carboxylic acid derivatives. 3,857,880, Cl. 260-515.00r.

Sherman, Morton, to Celotex Corporation, The. Easy release suspension system. 3,857,216, Cl. 52-489.000.

Shibata, Akio, to Eisai Co., Ltd. Addition of hydroxamic acid derivatives to feeds for reducing odor of poultry excrement. 3,857,946, Cl. 424-266.000.

Shibuya, Mitsuo: *See—*
Tanaka, Yoshiaki; Saito, Hideo; Miyazaki, Yukio; Sugawara, Hideo; Nagatsu, Junsaku; and Shibuya, Mitsuo, 3,857,948.

Shimizu, Hiroshi: *See—*
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Shimizu, Hitoshi: *See—*
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Shimizu, Mitsuo; and Sado, Ichiro, to Canon Kabushiki Kaisha. Device for controlling display output by micro-program. 3,858,197, Cl. 340-324.00r.

Shimoda, Kiyotaka: *See—*
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Shimoda, Noboru: *See—*
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Shin Nippon Machinery Co., Ltd.: *See—*
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Shindo, Minoru; Kakimoto, Morio; and Nagano, Hiroyuki, to Chugai Seiyaku Kabushiki Kaisha. 5-Substituted benzophenone hydrazone compounds. 3,857,887, Cl. 260-566.00b.

Shiongi & Co., Ltd.: *See—*
Nagata, Wataru; and Hayase, Yoshio, 3,857,834.

Shipman, David: *See—*
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Shock, John P., to Ultrasonic Systems, Inc. Ultrasonic cataract removal method and apparatus. 3,857,387, Cl. 128-24.00a.

Shoikhet, Grigory Yankelevich: *See—*
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Shu, Frank R.: *See—*
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Shuey, David R.: *See—*
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Shymkus, Robert M.: *See—*
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Sick, Erwin; and Gass, Ernst, to Sick, Erwin, Optik-Elektronic. Light barrier screen. 3,858,043, Cl. 250-221.000.

Sick, Erwin, Optik-Elektronic: *See—*
Sick, Erwin; and Gass, Ernst, 3,858,043.

Sick, Erwin, Optik-Elektronik, Firma: *See—*
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Sidbeck, Paul R.; and Weinstein, Daniel S., to North American Rockwell Corporation. Pattern welding process and control device. 3,858,025, Cl. 219-137.000.

Sidiropoulos, Konstantin. Magnetic locking mechanism. 3,857,262, Cl. 70-276.000.

Sidlo, Richard: *See—*
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Kuhrt, Friedrich; and Schreiner, Horst, 3,858,096.
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Sifakas, Costas. Thatcher. 3,857,226, Cl. 56-295.000.

Simms Group Research & Development Limited: *See—*
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Simonetti, Franco: *See—*
Maspero, Federico; Perrotti, Emilio; and Simonetti, Franco, 3,857,867.

Simonsen, Bent Pors; and Imhoff, Hans. Electrical discharge resistor. 3,858,146, Cl. 338-55.000.

Simpson, James H., Jr., to Singer Company, The, mesne. Method and apparatus for sensing chemical process concentrations. 3,858,111, Cl. 324-.50r.

Simpson Manufacturing Co., Inc.: *See—*
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Simpson, William R., to Sandoz-Wander, Inc. 1-Piperazinoisoquinolines as inotropic agents. 3,857,944, Cl. 424-250.000.

Sinai Hospital of Detroit: *See—*
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Singer Company, The, mesne: *See—*
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Sirianni, Aurelio F.; Funnell, Norman A.; and Puddington, Ira E., to Canadian Patents and Development Limited. Preparation of reinforcing amorphous silica. 3,857,925, Cl. 423-339.000.

Siska, Lubomir: *See—*
Stas, Bretislav; Dlouhy, Ludek; Siska, Lubomir; and Skrabis, Adolf, 3,858,167.

Sjardijn, Willem: *See—*
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Sjostrand, Staffan Gunnar: *See—*
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Skrabis, Adolf: *See—*
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Sleezer, Paul Edward: *See—*
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Smith, Dexter William; and Lumby, Roland John, to Lucas, Joseph, (Industries) Limited. Method of producing hot pressed components. 3,857,157, Cl. 29-420.500.

Smith, Donald Tolmon: *See—*
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Smith, Franklin J., to Microdry Corporation. Microwave applicator. 3,858,022, Cl. 219-10.55a.

Smith, George Elwood: *See—*
Boyle, Willard Sterling; and Smith, George Elwood, 3,858,232.

Smith, Grant N., to Dow Chemical Company, The. Photo-chemical reaction apparatus. 3,858,051, Cl. 250-527.000.

Smith, Harry A.; and Kobel, Erwin H., to Dow Chemical Company, The. Polyglycol-modified phenolic resins. 3,857,815, Cl. 260-51.500.

Smith International, Inc.: *See—*
Tschirky, John E., 3,857,655.

Smith, Jay N.; and Schantz, Robert I., to Impala Industries, Inc. Catalytic heater head. 3,857,669, Cl. 431-328.000.

Smith, Robert Lewis, to Chemetron Corporation. Feeding apparatus for elongated masses of material. 3,857,475, Cl. 198-137.000.

Smithwick, Edward L., Jr., to Lilly, Eli, and Company. Process for purifying blocked synthetic peptides. 3,857,829, Cl. 260-112.500.

Snam Progetti S.p.A.: *See—*
Maspero, Federico; Perrotti, Emilio; and Simonetti, Franco, 3,857,867.
Morelli, Morello; and De Marco, Fortunato, 3,857,894.

Snelling, Christopher, to Xerox Corporation. Photoelectrophoretic imaging apparatus. 3,857,549, Cl. 355-3.00p.

Snitzer, Morton: *See—*
Rogers, Walter Clark, Jr.; and Snitzer, Morton, 3,857,121.

Sno-Trik Company: *See—*
Bedo, Alfred; and Beck, Edward, 3,857,410.

Snowdon, Raymond, to Foseco Trading A.G. Combination plug-splash can and method of using same during casting. 3,857,438, Cl. 164-137.000.

Snyder, Larry L., to Jarva, Inc. Gage scraper for birotational tunneling machines. 3,857,610, Cl. 299-86.000.

Societe Anonyme Centre Europeen de Recherches Mauvernay: *See—*
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Societe Anonyme de Telecommunications: *See—*
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Societe Anonyme des Usines Chausson: *See—*
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Societe Nouvelle de Roulements: *See—*
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Societe Suisse pour l'Industrie Horlogere Management Services SA: *See—*
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Sohl, Edward: *See—*
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Sohring, Gunther: *See—*
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Somasekhara, Shanker; and Upadhyaya, Navinchandra Vasantrai, to Karamchand Premchand Private Limited. 8-Hydroxy quinoline derivatives. 3,857,877, Cl. 260-283.00s.

Sommerfeld, Irwin H.; Morgan, Edmond L.; Allen, Ethan J.; and Dewey, Charles N., to International Health Systems, Inc. Multiphasic health screening method and module. 3,857,383, Cl. 128-2.00d.

Sonderegger, Hans Conrad; Engeler, Paul; and Lutz, Eugen, Jr., to Kistler Instrumente A.G. Pressure transducers. 3,857,287, Cl. 73-395.000.

Soucek, Josef. Bullet-proof tire. 3,857,427, Cl. 152-196.000.

Spanjersberg, Arie Adriaan, to De Staat der Nederlanden, Ten deze Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. System for automatically reading symbols. 3,858,180, Cl. 340-146.30f.

Speers, Daniel E., to General Film Development Corporation. High contrast, high capacity monobath processing method and composition for monochrome film. 3,857,710, Cl. 96-61.00m.

Speigel, Kenneth: *See—*

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Staerzl, Richard E.: *See—*
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Stain, S. Douglas, Jr.; Liu, Gordon Y. T.; and Hutchinson, Lloyd B., to Dow Chemical Company, The. Incorporation of reinforcing fibers into olefin polymers. 3,857,813, Cl. 260-42.180.

Staley, A. E., Manufacturing Company: *See—*
Rogols, Saul; Hueckel, Edward J.; and Salter, John W., 3,857,987.

Stamicarbon N.V.: *See—*
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Standard Oil Company (Indiana): *See—*
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Stanley-Mabo: *See—*
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Stas, Bretislav; Dlouhy, Ludek; Siska, Lubomir; and Skrabis, Adolf, to Vedeckovyzkumny uhelny ustav. Arrangement for determination of the continuity of thickness and of structural-tectonic elements of mineable layers, particularly of coal seams. 3,858,167,Cl. 340-15.55w.

Statham Instruments, Inc.: *See—*
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Stauffer Chemical Company: *See—*
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Steetley (Mfg) Limited: *See—*
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Stein, Ira S.; and Carreira, Leonard M., to Xerox Corporation. Photoelectrophoretic imaging process using dry pigment coated substrate. 3,857,707, Cl. 96-1.200.

Steiner, Gerd; and Kuhnpast, Rainer, to Schloemann Aktiengesellschaft. Coupling with mechancial overload safety device. 3,857,257, Cl. 64-28.00r.

Steininger, Jacques; and Reed, Thomas B., to Massachusetts Institute of Technology. Heat pipe furnace. 3,857,990, Cl. 13-22.000.

Sterling Drug Inc.: *See—*
Lesher, George Y.; and Gruett, Monte D., 3,857,851.

Sternberg, James C., to Beckman Instruments, Inc. Rate sensing batch analyzer. 3,857,771, Cl. 204-195.00b.

Stevens, J. P., & Co., Inc.: *See—*
Hansen, Ralph H., 3,857,753.

Stevens, Travis E.; and Reed, Samuel F., Jr. Ferrocene containing monomers and copolymers. 3,857,870, Cl. 260-439.0cy.

Stevens, William Henry, II, to Morris, Philip, Incorporated. Dermatone cutting blade assembly. 3,857,178, Cl. 30-344.000.

Stickney, William A.: *See—*
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Stievenart, Emile Frans; and Mueller, Juergen, to Agfa-Gevaert Aktiengesellschaft. Apparatus for wet treatment of photosensitive material. 3,858,229, Cl. 354-331.000.

Stiftelsen Skogsmekanisering: *See—*
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Stimson, Ian Leonard, to Dunlop Limited. Composite articles. 3,857,469, Cl. 192-107.00m.

Stoepel, Kurt: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,857,849.

Stolting, Klaus: *See—*
Warzecha, Klaus; Stolting, Klaus; and Schminke, Wolfgang, 3,857,833.

Stone, David L.: *See—*
Delagi, Bruce A.; Stone, David L.; Cutler, David; and , 3,858,182.

Stoner, Jesse A., to General Electric Company. Method and apparatus for positioning components of dynamoelectric machine for assembly. 3,857,170, Cl. 29-596.000.

Strawson Hydraulics (Consultants) Limited: *See—*
Salvin, Keith Thomas; and Lane, David Silvester, 3,858,011.

Streck, Roland; and Weber, Heinrich, to Chemische Werke Huls Aktiengesellschaft. Process for the production of polymeric hydrocarbons having reactive silyl end troups. 3,857,825, Cl. 260-88.10r.

Streicher, Max, to Fordertechnik Steicher GmbH. Adjustable diameter stator for excentric helical screw pump. 3,857,654, Cl. 418-48.000.

Strong, Robert D., to Hoffmann-La Roche Inc., mesne. Selective polarizer arrangement for liquid crystal displays. 3,857,628, Cl. 350-160.0lc.

Stroz, John J.: *See—*
Aref, Moustafa M.; Stroz, John J.; and Johnson, Gordon W., 3,857,974.

Strum, Burthold: *See—*
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Studeneer, Adolf: *See—*
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Sturiale, Louis A.; and Waszink, Remco P., to Westinghouse Electric Corporation. Heat exchanger having a head with an integral radiation shield. 3,857,442, Cl. 165-134.000.

Sturm, Ruger & Co., Inc.: *See—*
Ruger, William B.; and Sefried, Harry H., II, 3,857,323.

Sturwold, Robert J.; and Barrett, Fred O., to Emery Industries, Inc. Ester lubricants suitable for use in aqueous systems. 3,857,865, Cl. 260-407.000.

Subcom, Inc.: *See—*
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Sugawara, Hideo: *See—*
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Sugiyama, Mitsunori: *See—*
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Suhr, Robert G.: *See—*
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Sukenari, Junko: *See—*
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Sulich, Michael; and Vinal, Albert W., to International Business Machines Corporation. Magnetic circuit device for a contactless switch or the like. 3,858,145, Cl. 338-32.00h.

Sullivan, Alfred Bay; and Wilder, Gene Ray, to Monsanto Company. Stable compositions for inhibiting polymerization of unsaturated carboxylic acid esters. 3,857,878, Cl. 260-486.00r.

Sumimoto, Toru: *See—*
Koizumi, Ken; Sumimoto, Toru; Matsushita, Shigeo; and Furukawa, Motaoaki, 3,857,689.

Sumitomo Chemical Company, Limited: *See—*
Ohno, Nobuo; Itaya, Nobushige; Mizutani, Toshio; Okuno, Yositosi; Fujimoto, Keimei; and Kawanami, Toru, 3,857,863.

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Sumitomo, Fukishi: *See—*
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Suzuki, Takeshi: *See—*
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Svendsen, Svend Anker, to Slagteriernes Forskningsinstitut. Method of preparing a packaged heat sterilized minced meat product. 3,857,986, Cl. 426-371.000.

Swalinkavich, Joseph E., Jr. Holder for a paint pail and applicator. 3,857,537, Cl. 248-210.000.

Swanson, Howard E.; and Rudy, Richard S., to GSW Electric Specialty Company. Switch transfer mechanism. 3,858,133, Cl. 335-160.000.

Swift & Company: *See—*
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Swingline Inc.: *See—*
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Sybron Corporation: *See—*
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Najer, Henry; Manoury, Philippe Michel Jacques; Fernand, Andre Pierre; and Giudicelli, Don Pierre Rene Lucien, 3,857,945.
Szucs, Laszlo; Tasnadi, Csaba; and Lindner, Istvan, to Energiagazdalkodasi Intezet. Apparatus for heat and mass transfer between liquids and gases. 3,857,911, Cl. 261-112.000.
Szymanski, Chester D.; Tessler, Martin M.; and Bell, Harvey, to National Starch and Chemical Corporation. Food products containing epichlorohydrin-inhibited, stabilized retort starches. 3,857,976, Cl. 426-167.000.
Tachikawa, Kyoji; and Yoshida, Yuji, to National Research Institute for Metals, The Director of. Method of producing a composite superconductor. 3,857,173, Cl. 29-599.000.
Taguchi, Tetsuya: *See—*
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Takechi, Hiroshi: *See—*
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Takeguchi, Kazuo: *See—*
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Takenaka, Shigeo; Shimizu, Hitoshi; and Ogawa, Masanobu, to Nippon Kayaku Kabushiki Kaisha. Oxidation catalyst. 3,857,796, Cl. 252-467.000.
Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Vehicle polishing apparatus. 3,857,135, Cl. 15-230.140.
Takeuchi Tekko Kabushiki Kaisha: *See—*
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Takeuchi, Tsuneo. Pantograph-type jack. 3,857,548, Cl. 254-126.000.
Takiguchi, Sunichi; Satoyoshi, Yasuhiko; Hamada, Shinji; Nakamura, Takeshi; Koba, Sadaaki; and Shimoda, Noboru, to Fuji Photo Film Co., Ltd. Film cassette cover opener. 3,857,153, Cl. 29-200.00d.
Takishima, Yoshiyuki: *See—*
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Talkies U.S.A., Inc.: *See—*
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Tamura, Nobuhiro; Mitsui, Ryoichi; Watanabe, Seizaburo; and Kazuo, Suga, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for eliminating nitrogen oxides and catalyst composition for use in practicing said method. 3,857,921, Cl. 423-213.500.
Tanaka, Yoshiaki; Saito, Hideo; Miyazaki, Yukio; Sugawara, Hideo; Nagatsu, Junsaku; and Shibuya, Mitsuo, to Kaken Chemical Co., Ltd. Salinomycin. 3,857,948, Cl. 424-283.000.
Tant, William A. Semi-automatic firearm. 3,857,324, Cl. 89-197.000.
Tasaka, Akira; Morii, Akira; and Matoba, Yousuke, to Sumitomo Chemical Company, Ltd. Process for selective methylation of phenols. 3,857,899, Cl. 260-621.00r.
Tasnadi, Csaba: *See—*
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Taylor, Dudley D.; and Halling, Horace P., to Pressure Science, Inc. E-ring seal assembly. 3,857,572, Cl. 277-9.500.
Taylor, Eugene D., to Case, J. I., Company. Concrete placer assembly. 3,857,328, Cl. 92-129.000.
Taylor, Nicholas Simon Hall; and Noren, Carl Anders, to Atlas Copco Aktiebolag. Rock-cutting machines. 3,857,516, Cl. 239-186.000.
TDK Electronics Co., Ltd.: *See—*
Nakagawa, Shiro; Nakamoto, Soichi; Takishima, Yoshiyuki; Taguchi, Tetsuya; and Kakunodate, Masamichi, 3,858,226.
Teach, Eugene G., to Stauffer Chemical Company. Fungicidal active phthalimides. 3,857,947, Cl. 424-274.000.
Technicon Instruments Corporation: *See—*
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Tecnomare S.p.A.: *See—*
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Teed, Richard K., to Riegel Textile Corporation. Fiberizing and pad forming apparatus. 3,857,657, Cl. 425-80.000.
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Thyen, Eberhard Heinrich, to Ethicon, Inc. Suture package. 3,857,484, Cl. 206-227.000.
Tiby, Gerard A., to Hobart Manufacturing Company, The. Food cutting and dicing apparatus. 3,857,310, Cl. 83-26.000.
Tieszen, Dale O., to Phillips Petroleum Company. Crackle finish coating of arylene sulfide polymer containing a fluorocarbon polymer. 3,857,852, Cl. 260-29.60f.
Tillson, Robert S., to General Electric Company. Rejector-type fuse clip. 3,858,058, Cl. 339-258.00f.
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Tompkins, Leo L.; and Hughes, J. Willis. Multi-purpose information gathering and distribution system. 3,858,212, Cl. 343-100.0cs.
Tomsky, Harry W.; and Parke, Harry G., said Tomsky, Harry W., assor. t CML-Macarr, Inc. Circuit for prolonging the life of fluorescent lamps. 3,858,087, Cl. 315-86.000.
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Valentyik, Laszlo; and Patton, John T., to Michigan Technological University, Board of Control. Stabilization of suspensions used in heavy-media separation processes. 3,857,489, Cl. 209-172.500.

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van der Bend, Herman Th.; and Sjardijn, Willem, to Shell Oil Company. Preparation of $TiCl_3$ component of olefin polymerization catalyst. 3,857,795, Cl. 252-429.00a.

Van Gils, Gerard E., to General Tire & Rubber Company, The. Adhesive dip for bonding rubber to bright steel wire. 3,857,726, Cl. 117-49.000.

Van Hove, Camille Cesar, to Buchmann Optical Industries. Device for the feeding of optical glasses, particularly for spectacles, to a glass-treating machine and for the removal of said glasses therefrom. 3,857,205, Cl. 51-134.000.

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Vanover, Henry R. Occupant propelled quadracycle. 3,857,583, Cl. 280-282.000.

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Verhille, Karel Eugeen; and Noe, Robert Joseph, to Agfa-Gevaert. Zinc oxide-binder medium containing microscopic cavities. 3,857,708, Cl. 96-1.800.

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Voellmin, Siegfried; and Muller, Klaus, to F. Hoffmann-La Roche & Co., Aktiengesellschaft. Method and apparatus for the testing of protective linings. 3,858,114, Cl. 324-54.000.

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Wagenfuhrer, Gunter; Hartmann, Bruno; and Rothmann, Hans-Werner, to Kuppersbusch, F., & Sohne AG. Arrangement for the dosing and distribution of food. 3,857,463, Cl. 186-1.00r.

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Wall, David Thomas; and Burr, Neil Albert, to Lucas, Joseph, (Industries) Limited. Conductive ink composition containing Pd and Pb metal powders. 3,857,798, Cl. 252-514.000.

Walley, Joseph M., to General Electric Company. Electrical switch with removable driving means. 3,858,018, Cl. 200-153.0la.

Walsh, Robert J., to Monsanto Company. Apparatus for waxless polishing of thin wafers. 3,857,123, Cl. 51-131.000.

Walter, Henry J., to Clairol Incorporated. Hairsetter. 3,858,029, Cl. 219-222.000.

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Ward, Howard Christian, Jr., to General Electric Company. Dynamoelectric machine having ventilating means. 3,858,068, Cl. 310-59.000.

Ward, John T.; and Keller, Allen B. Fluid level alarm and control device. 3,857,358, Cl. 116-110.000.

Ward, John T.; and Keller, Allen B. Fluid level alarm and control device. 3,857,359, Cl. 116-110.000.

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Watson, George W. Cervical tissue cell specimen gathering device. 3,857,384, Cl. 128-2.00b.

Watts, Leonard, to Technicon Instruments Corporation. Method and apparatus for continuously casting metals. 3,857,437, Cl. 164-83.000.

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Wehrli, Pius Anton, to Hoffmann-La Roche Inc. Process for the preparation of 2,5,6-tri-lower-alkyl-2-cyclohexenones. 3,857,892, Cl. 260-586.00r.

Weinberger, C., & Co., Ltd.: *See—*
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Western Electric Company, Incorporated: *See—*
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Wiggins, Richard F., to Gyromat Corporation, Inc. Semi-automatic color change system for paint spray installation. 3,857,513, Cl. 239-70.000.

Wight, Edward M., to Glacier Industries, Inc. Food product freezing apparatus. 3,857,252, Cl. 62-266.000.

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Wiklund, Per Martin, to Stiftelsen Skogsmekanisering. Tree-felling device. 3,857,425, Cl. 144-34.00r.

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Wilkinson, Geoffrey, to Ethyl Corporation. Hydrogenation of aldehydes using triarylplosphine rhodium halogenoid catalysts. 3,857,900, Cl. 260-638.00b.

Wilkinson, Thomas A. Interchangeable plug-in modular appliance unit system. 3,858,091, Cl. 317-120.000.

William, A. Reimer, to GTE Automatic Electric Laboratories Incorporated. Sliding three dimensional packaging technique. 3,858,154, Cl. 339-17.01m.

Williams, Edward L., to International Harvester Company. Regulated ignition amplifier circuit. 3,857,376, Cl. 123-148.00e.

Williams, Maryon J., Jr.; Walkowitz, Walter; Fich, Sylvan; Jaron, Dov; Kantrowitz, Adrian; and Molony, Donald A., to Sinai Hospital of Detroit. Piezoelectric heart assist apparatus. 3,857,382, Cl. 128-1.00d.

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Williamson, John E., to Kenney Manufacturing Company. Curtain rod bracket. 3,857,538, Cl. 248-263.000.

Williford, Thomas Leslie, Jr.: *See—*
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Wing, Bernard Ridge, to Dunlop Limited. Vehicle suspensions. 3,857,556, Cl. 267-63.00a.

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Wolf, Leonard H., Jr. Brushing accessory for spin filter. 3,857,786, Cl. 210-331.000.

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Wood, Prentice J., to Mead Corporation, The. Article carrier. 3,857,483, Cl. 206-187.000.

Woodfill, William L., to Brunswick Corporation. Marine jet drive propulsion apparatus. 3,857,355, Cl. 115-12.00r.

Woodruff, Douglas, to Morton-Norwich Products, Inc. Ignition resistant mattress construction. 3,857,126, Cl. 5-345.00r.

Woods, Jack L., to Permaloy Corporation. Process for anodizing aluminum and its alloys. 3,857,766, Cl. 204-58.000.

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Wynn, John F., Jr.; and Trowbridge, Clifford F., to United States of America, Navy. Subsurface submersible mating system. 3,857,351, Cl. 114-16.400.

Wyrick, Charles Thomas, to AMP Incorporated. Electrical connector. 3,857,995, Cl. 174-84.00c.

Wyss, Rudolf F.; and Grenley, Dallas G., to Dow Chemical Company, The. Method for preparing brick panels. 3,857,918, Cl. 264-261.000.

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Yates, Charles B.; and Wolski, Adam M., to Yates Industries, Inc. Copper foil treatment and products produced therefrom. 3,857,681, Cl. 29-195.000.

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Yokokowa, Toshiki; and Kawakita, Chihiro, to OKI Electric Industry Co., Ltd. Method of manufacturing reed switches with oxidized rhodium contacts. 3,857,175, Cl. 29-622.000.

Yolles, Seymour, 10% to Brook, David E. Controlled release flavor compositions. 3,857,964, Cl. 426-3.000.

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Yoshino, Toshio, to Weinberger, C., & Co., Ltd. Process for manufacture of deodorizing air filters. 3,857,732, Cl. 117-138.80n.

Yosim, Samuel J.: *See—*
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Young, Carl. Disposable container means. 3,857,597, Cl. 294-1.00r.

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Young, Ralph B.: *See—*
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Youngs, Homer S. Shock absorber testing machine. 3,857,275, Cl. 73-11.000.

Yuminaka, Takeo: *See—*
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Zacouto, Fred. Heart pacer. 3,857,399, Cl. 128-419.00p.

Zahid, Abduz, to Greer Hydraulics, Inc. Pressure pulse dampener device. 3,857,413, Cl. 138-26.000.

Zahn, Wolfgang: *See—*
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Zarro, Michael, to Blonder-Tongue Laboratories, Inc. Universal female coaxial connector. 3,858,156, Cl. 339-32.000.

Zennie, Michael Maurice. Liquid spray device. 3,857,515, Cl. 239-169.000.

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Zulch, Donald I., to United States of America, Air Force. Radar moving target tracking system. 3,858,209, Cl. 343-7.700.

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Zwingenberger, Arno; Wunner, Roland; and Liebrandt, Karl; deceased (by Liebrandt, Sophia, nee Saalfrank; and Liebrandt, Gunnar; heirs and legal representatives). Sinker arrangement for warp knitting and Raschel machines. 3,857,260, Cl. 66-84.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF DECEMBER, 1974

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Borup, Alf L., and K. R. Hamrin, to Lesjofors AB. Spring-loaded clamping devices for fastening railroad rails. Re. 28,291, 12–31–74, Cl. 238—349.

Calkins, Forrest I. Pen holder attachment device. Re. 28,289, 12–31–74, Cl. 224—28.

Eichler, Wolfgang: *See*—
Greiner, Joachim, Eichler, and Krones. Re. 28,290.

Goetz, Richard W., and I. L. Mador, to National Distillers and Chemical Corp. Catalyzed hydrolysis of nitriles to amides. Re. 28,288, 12–31–74, Cl. 260—561.

Greiner, Joachim, W. Eichler, F. Krones, by AGFA Aktiengesellschaft. Curie point magnetic recording process. Re. 28,290, 12–31–74, Cl. 360—16.

Hamrin, Karl R.: *See*—
Borup, Alf L., and Hamrin. Re. 28,291.

Johnson Diversified, Inc.: *See*—
Johnson, Lloyd E. Re. 28,286.

Johnson, Lloyd E., deceased, by Johnson Diversified, Inc., to Johnson Diversified, Inc. Line control for spin casting reels. Re. 28,286, 12–31–74, Cl. 242—84.2.

Jommi, Giancarlo, G. Riva, F. Mauri, and L. Mauri, to Ravizza SA. Process for the resolution of racemic 3-succinyloxy-5-phenyl - 1,3-dihydro-2H-1,4-benzodiazepine-2-one-derivatives into optical antipedes. Re. 28,287, 12–31–74, Cl. 424—244.

Krones, Friedrich: *See*—
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Lesjofors AB: *See*—
Borup, Alf L., and Hamrin. Re. 28,291.

MacDonnell, Robert W., to Unity Railway Supply Co., Inc. Self-lubricating side bearing. Re. 28,284, 12–31–74, Cl. 308—138.

Mador, Irving L.: *See*—
Goetz, Richard W., and Mador. Re. 28,288.

National Distillers and Chemical Corp.: *See*—
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RCA Corp.: *See*—
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Schanne, Joseph F., to RCA Corp. Article labeling and identification system. Re. 28,285, 12–31–74, Cl. 235—61.

Mauri, Francesco: *See*—
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Mauri, Luigi: *See*—
Jommi, Giancarlo, Riva, Mauri, and Mauri. Re. 28,287.

Ravizza SA: *See*—
Jommi, Giancarlo, Riva, Mauri, and Mauri. Re. 28,287.

Riva, Giovanna: *See*—
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Acton Rubber Ltd., The: *See*—
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Bernard, Charles. Chair. 234,015, 12–31–74, Cl. D6—47.

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Continental Can Co., Inc.: *See*—
D'Alo, Herbert F. 234,019.

Control Data Corp.: *See*—
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Cox, Quentin T. Dog house. 234,023, 12–31–74, Cl. D30—1.

Cray, Seymour, L. T. Davis, and M. D. Roush, to Control Data Corp. Computer mainframe console. 234,022, 12–31–74, Cl. D26—5.

Daher, Theodore G., to General Electric Co. Clock or similar article, 234,020, 12–31–74. Cl. D10—17.

D'Alo, Herbert F., to Continental Can Co., Inc. Jug. 234,019, 12–31–74, Cl. D9—44.

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Davis, Lester T.: *See*—
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DeBrey, Robert J., to Fingerhut Corp. Electric grass shear. 234,018, 12–31–74, Cl. D8—8.

Erickson, Donald G., and V. R. Kaufman, to Jacobsen Mfg. Co. Vented rotary lawn mower housing. 234,028, 12–31–74, Cl. D40—1.

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Erickson, Donald G., and Kaufman. 234,028.

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Knueff, Charles D. Aquarium. 234,024, 12–31–74, Cl. D30—9.

Krumholz, Jerrold J., H. H. V. Reisgen, and P. B. Means, to Kusan, Inc. Toy vehicle. 234,027, 12–31–74, D34—15.

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Lamarche, Raymond B., to The Acton Rubber Ltd. Boot sole for football footwear. 234,013, 12–31–74, Cl. D2—320.

Lee, David W.: *See*—
Christian, Hubert E., and Lee. 234,017.

Leo, Carmen. Ring. 234,029, 12–31–74, Cl. D45—10.

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Murray, William B., to Sportscraft, Inc. Aerated bait circulator. 234,031, 12–31–74, Cl. D65—1.

Parker, Douglas W. Fishing lure. 234,021, 12–31–74, Cl. D22—28.

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U. S. GOVERNMENT PRINTING OFFICE : O - 1974

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